

MHI

Manual No. '06-SRK-T-062

TECHNICAL MANUAL

Collection data

WALL MOUNTED TYPE ROOM AIR-CONDITIONER

(Split system, air cooled cooling only type)

SRK52CF-BN, 71CF-BN

SRK52CF-BP, 71CF-BP



MITSUBISHI HEAVY INDUSTRIES, LTD.

CONTENTS

1. GENERAL INFORMATION	1
1.1 Specific features	1
1.2 How to read the model name	1
2. SELECTION DATA	2
2.1 Specifications	2
2.2 Range of usage & limitations	6
2.3 Exterior dimensions	6
2.4 Piping system	8
2.5 Selection chart	9
3. ELECTRICAL DATA	10
3.1 Electrical wiring	10
4. OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER	14
4.1 Operation control function by remote control switch	14
4.2 Unit ON/OFF button	16
4.3 Power blackout auto restart function	16
4.4 Custom cord switching procedure	17
4.5 Flap and louver control	17
4.6 Comfortable timer setting	18
4.7 Sleep timer operation	18
4.8 Outline of cooling operation	19
4.9 Outline of dehumidifying operation	20
4.10 Outline of automatic operation	21
4.11 Set temperature selection	21
4.12 Outline of fan operation	22
4.13 Regulation of outdoor air flow	22
4.14 Stop mode	23
4.15 External control (remote display)/control of input signal	24
4.16 Operation permission/prohibition control	25
4.17 Protective control function	25
4.18 List of indoor unit jumper selections	28
5. APPLICATION DATA	29
5.1 Selection of location for installation	30
5.2 Installation of indoor unit	31
5.3 Installation of outdoor unit	34
5.4 Refrigerant piping	34
5.5 Test run	36
5.6 Precautions for wireless remote control installation and operation	36
5.7 Installation of wired remote control and super link adapter (SC-AD-ER) (Optional parts)	37
6. MAINTENANCE DATA	44
6.1 Troubleshooting procedures for electrical equipment	44
6.2 Servicing	52

1 GENERAL INFORMATION

1.1 Specific features

The “MITSUBISHI HEAVY INDUSTRIES, LTD.” room air-conditioner: SRK series are of split and wall mounted type and the unit consists of indoor unit and outdoor unit with refrigerant precharged in factory. The indoor unit is composed of room air cooling equipment with operation control switch and the outdoor unit is composed of condensing unit with compressor.

(1) Remote control flap & louver

The flap & louver can be automatically controlled by operating wireless remote control.

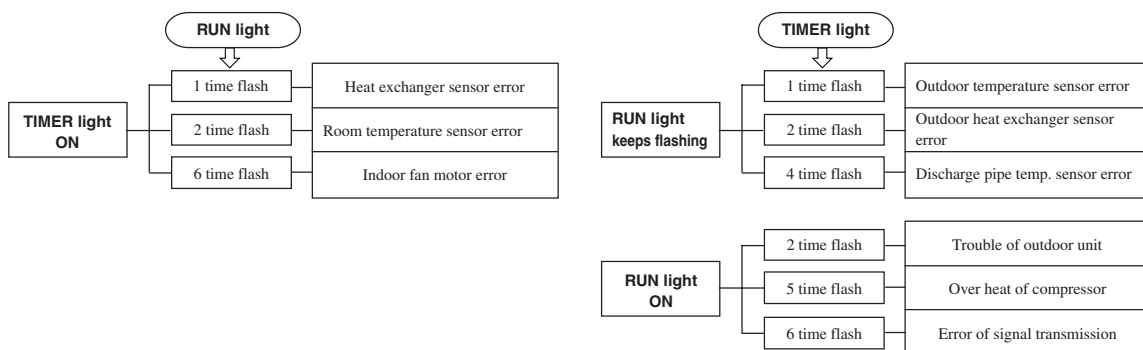
- Flap swing : The flaps swing up and down successively.
- Louver swing : The louvers swing left and right successively.
- Multi-directional Air Flow : Activating both up/down air swing and left/right air swing at the same time results in a multi-directional air flow.
- Memory flap : Once the flap & louver position is set, the unit memorizes the position and continues to operate at the same position from the next time.

(2) Automatic operation

When the remote control switch is set on “auto(☉)”, it will either automatically decide operation mode such as cooling and thermal dry, or operate in the operation mode before it has been turned to automatic control.

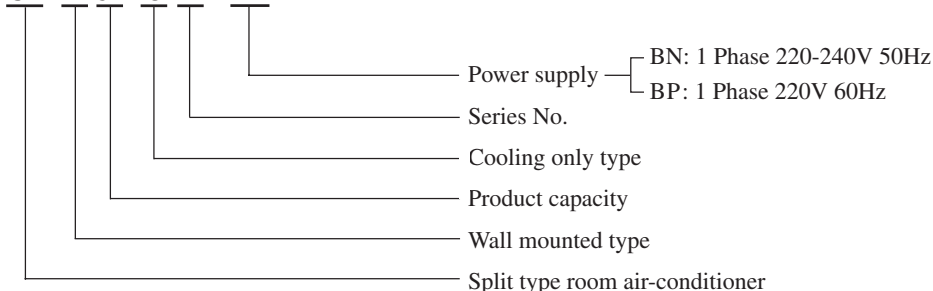
(3) Self diagnosis function

- We are constantly trying to do better service to our customers by installing such judges that show abnormality of operation as follows.



1.2 How to read the model name

Example : **SR K 52 C F - BN**



2. SELECTION DATA

2.1 Specifications

Model SRK52CF-BN (Indoor unit)
SRC52CF-BN (Outdoor unit)

(220/240V)

Item			Model	SRK52CF-BN	SRC52CF-BN
ISO-T1 (JIS)	Cooling capacity	kW		5.4 / 5.4	
	Cooling power input	kW		1.76 / 1.91	
	Energy efficiency ratio	Btu/hW		10.47 / 9.66	
	Rating current	A		8.8 / 8.7	
ISO-T3 (SASO)	Cooling capacity	kW		5.0 / 5.0	
	Cooling power input	kW		2.06 / 2.20	
	Energy efficiency ratio	Btu/hW		8.29 / 7.75	
	Rating current	A		10.3 / 10.1	
Power source				1 Phase, 220-240V, 50Hz	
Noise level	Cooling	Sound level	dB	Hi 43, Me 40, Lo 37	49
Exterior dimensions			mm	318 × 1098 × 248	640 × 850 × 290
Height × Width × Depth					
Color				Yellowish white	Stucco white
Net weight			kg	15	46
Refrigerant equipment					
Compressor type & Q'ty				—	2KS314D5AB04 (Rotary type) × 1
Motor			kW	—	1.5
Starting method				—	Line starting
Heat exchanger				Slit fins & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electric expansion valve	
Refrigerant ⁽³⁾			kg	R22 1.25 (Pre-Charged up to the piping length of 7m)	
Refrigerant oil			ℓ	0.67 (ATMOS NM56M or SUNISO 4DGID)	
Deice control				Microcomputer control	
Air handling equipment					
Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	46	35
Air flow (at High)			(Cooling) CMM	20	38
Air filter, Q'ty				Polypropylene net (washable) × 2	—
Shock & vibration absorber				—	Cushion rubber (for compressor)
Electric heater				—	—
Operation control					
Operation switch				Wireless-Remote control	—
Room temperature control				Microcomputer thermostat	—
Pilot lamp				RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment				Compressor: overheat protection, Frost protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D	mm (in)		Liquid line: φ6.35 (1/4") Gas line: φ15.88 (5/8")	
	Connecting method			Flare connecting	
	Attached length of piping			Liquid line: 0.70m Gas line: 0.63m	—
	Insulation			Necessary (Both sides)	
Drain hose				Connectable	
Power source supply				Terminal block (Screw fixing type)	
Connection wiring	Size × Core number			1.5 mm ² × 4 cores (Including earth cable)	
	Connecting method			Terminal block (Screw fixing type)	
Accessories (included)				Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts				Wired-Remote control	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS C9612
	29°C	19°C	46°C	24°C	ISO-T3, SASO 385/386

The piping length is 7.5m.

- (2) The operation data are applied to the 220/240V districts respectively.
 (3) The refrigerant quantity to be charged includes the refrigerant in 7 m connecting piping.
 (Purging is not required even in the short piping.)
 If the piping length is longer, when it is 7 to 25m, add 25g refrigerant per meter.

Model SRK71CF-BN (Indoor unit)
SRC71CF-BN (Outdoor unit)

(220/240V)

Item			Model	SRK71CF-BN	SRC71CF-BN
ISO-T1 (JIS)	Cooling capacity		kW	7.03 / 7.03	
	Cooling power input		kW	2.12 / 2.27	
	Energy efficiency ratio		Btu/hW	11.33 / 10.58	
	Rating current		A	10.6 / 10.4	
ISO-T3 (SASO)	Cooling capacity		kW	6.3 / 6.3	
	Cooling power input		kW	2.48 / 2.60	
	Energy efficiency ratio		Btu/hW	8.67 / 8.26	
	Rating current		A	12.4 / 11.9	
Power source				1 Phase, 220-240V, 50Hz	
Noise level	Cooling	Sound level	dB	Hi 45, Me 42, Lo 39	55
Exterior dimensions			mm	318 × 1098 × 248	750 × 880 × 340
Height × Width × Depth					
Color				Yellowish white	Stucco white
Net weight			kg	15	67
Refrigerant equipment					
Compressor type & Q'ty				—	2JS386D5BC02 (Rotary type) × 1
Motor			kW	—	1.8
Starting method				—	Line starting
Heat exchanger				Slit fins & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electric expansion valve	
Refrigerant ⁽³⁾			kg	R22 1.75 (Pre-charged up to the piping length of 7m)	
Refrigerant oil			ℓ	0.7 (ATMOS NM56M or SUNISO 4GDID)	
Deice control				Microcomputer control	
Air handling equipment					
Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	46	85
Air flow (at High)		(Cooling)	CMM	20.5	60
Air filter, Q'ty				Polypropylene net (washable) × 2	—
Shock & vibration absorber				—	Cushion rubber (for compressor)
Electric heater				—	—
Operation control					
Operation switch				Wireless-Remote control	—
Room temperature control				Microcomputer thermostat	—
Pilot lamp				RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment				Compressor: overheat protection, Frost protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D		mm (in)	Liquid line: φ6.35 (1/4") Gas line: φ15.88 (5/8")	
	Connecting method			Flare connecting	
	Attached length of piping			Liquid line: 0.70m Gas line : 0.63m	—
	Insulation			Necessary (Both sides)	
Drain hose				Connectable	
Power source supply				Terminal block (Screw fixing type)	
Connection wiring	Size × Core number			1.5 mm ² × 4 cores (Including earth cable)	
	Connecting method			Terminal block (Screw fixing type)	
Accessories (included)				Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts				Wired-Remote control	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation	27°C	19°C	35°C	24°C	ISO-T1, JIS C9612
Cooling	29°C	19°C	46°C	24°C	ISO-T3, SASO 385/386

The piping length is 7.5m.

- (2) The operation data are applied to the 220/240V districts respectively.
(3) The refrigerant quantity to be charged includes the refrigerant in 7 m connecting piping.
(Purging is not required even in the short piping.)
If the piping length is longer, when it is 7 to 25m, add 25g refrigerant per meter.

Model SRK52CF-BP (Indoor unit)
SRC52CF-BP (Outdoor unit)

(220V)

Item			Model	SRK52CF-BP	SRC52CF-BP
ISO-T1 (JIS)	Cooling capacity		kW	5.4	
	Cooling power input		kW	1.76	
	Energy efficiency ratio		Btu/hW	10.47	
	Rating current		A	8.8	
ISO-T3 (SASO)	Cooling capacity		kW	5.0	
	Cooling power input		kW	2.06	
	Energy efficiency ratio		Btu/hW	8.29	
	Rating current		A	10.3	
Power source				1 Phase, 220V, 60Hz	
Noise level	Cooling	Sound level	dB	Hi 43, Me 40, Lo 37	49
Exterior dimensions			mm	318 × 1098 × 248	640 × 850 × 290
Height × Width × Depth					
Color				Yellowish white	Stucco white
Net weight			kg	15	46
Refrigerant equipment					
Compressor type & Q'ty				—	2KS252H5AB04 (Rotary type) × 1
Motor			kW	—	1.2
Starting method				—	Line starting
Heat exchanger				Slit fins & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electric expansion valve	
Refrigerant ⁽³⁾			kg	R22 1.25 (Pre-Charged up to the piping length of 7m)	
Refrigerant oil			ℓ	0.65 (ATMOS NM56M or SUNISO 4GDID)	
Deice control				Microcomputer control	
Air handling equipment					
Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	46	29
Air flow (at High)		(Cooling)	CMM	20	38
Air filter, Q'ty				Polypropylene net (washable) × 2	—
Shock & vibration absorber				—	Cushion rubber (for compressor)
Electric heater				—	—
Operation control					
Operation switch				Wireless-Remote control	—
Room temperature control				Microcomputer thermostat	—
Pilot lamp				RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment				Compressor: overheat protection, Frost protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D		mm (in)	Liquid line: φ6.35 (1/4") Gas line: φ15.88 (5/8")	
	Connecting method			Flare connecting	
	Attached length of piping			Liquid line: 0.70m Gas line: 0.63m	—
	Insulation			Necessary (Both sides)	
Drain hose				Connectable	
Power source supply				Terminal block (Screw fixing type)	
Connection wiring	Size × Core number			1.5 mm ² × 4 cores (Including earth cable)	
	Connecting method			Terminal block (Screw fixing type)	
Accessories (included)				Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts				Wired-Remote control	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation	27°C	19°C	35°C	24°C	ISO-T1, JIS C9612
Cooling	29°C	19°C	46°C	24°C	ISO-T3, SASO 385/386

The piping length is 7.5m.

- (2) The operation data are applied to the 220V districts respectively.
(3) The refrigerant quantity to be charged includes the refrigerant in 7 m connecting piping.
(Purging is not required even in the short piping.)
If the piping length is longer, when it is 7 to 25m, add 25g refrigerant per meter.

Model SRK71CF-BP (Indoor unit)
SRC71CF-BP (Outdoor unit)

(220V)

Item			Model	SRK71CF-BP	SRC71CF-BP
ISO-T1 (JIS)	Cooling capacity		kW	7.03	
	Cooling power input		kW	2.12	
	Energy efficiency ratio		Btu/hW	11.33	
	Rating current		A	10.6	
ISO-T3 (SASO)	Cooling capacity		kW	6.3	
	Cooling power input		kW	2.48	
	Energy efficiency ratio		Btu/hW	8.67	
	Rating current		A	12.4	
Power source				1 Phase, 220V, 60Hz	
Noise level	Cooling	Sound level	dB	Hi 45, Me 42, Lo 39	55
Exterior dimensions			mm	318 × 1098 × 248	750 × 880 × 340
Height × Width × Depth					
Color				Yellowish white	Stucco white
Net weight			kg	15	67
Refrigerant equipment					
Compressor type & Q'ty				—	2JS318H5AB02(Rotary type) × 1
Motor			kW	—	1.5
Starting method				—	Line starting
Heat exchanger				Slit fins & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electric expansion valve	
Refrigerant ⁽³⁾			kg	R22 1.75 (Pre-charged up to the piping length of 7m)	
Refrigerant oil			ℓ	0.7 (ATMOS NM56M or SUNISO 4GDID)	
Deice control				Microcomputer control	
Air handling equipment					
Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	46	73
Air flow (at High)		(Cooling)	CMM	20.5	60
Air filter, Q'ty				Polypropylene net (washable) × 2	—
Shock & vibration absorber				—	Cushion rubber (for compressor)
Electric heater				—	—
Operation control					
Operation switch				Wireless-Remote control	—
Room temperature control				Microcomputer thermostat	—
Pilot lamp				RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment				Compressor: overheat protection, Frost protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D		mm (in)	Liquid line: φ6.35 (1/4") Gas line: φ15.88 (5/8")	
	Connecting method			Flare connecting	
	Attached length of piping			Liquid line: 0.70m Gas line : 0.63m	—
	Insulation			Necessary (Both sides)	
Drain hose				Connectable	
Power source supply				Terminal block (Screw fixing type)	
Connection wiring	Size × Core number			1.5 mm ² × 4 cores (Including earth cable)	
	Connecting method			Terminal block (Screw fixing type)	
Accessories (included)				Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts				Wired-Remote control	

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS C9612
	29°C	19°C	46°C	24°C	ISO-T3, SASO 385/386

The piping length is 7.5m.

- (2) The operation data are applied to the 220V districts respectively.
(3) The refrigerant quantity to be charged includes the refrigerant in 7 m connecting piping.
(Purging is not required even in the short piping.)
If the piping length is longer, when it is 7 to 25m, add 25g refrigerant per meter.

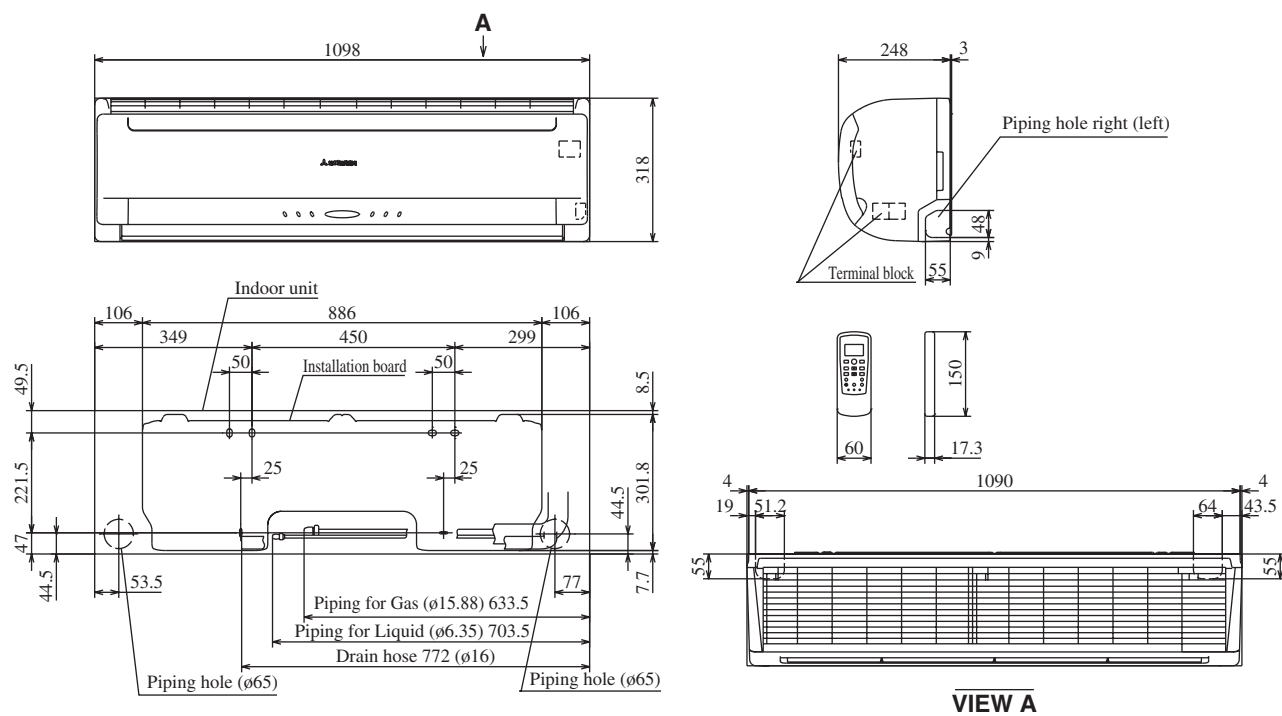
2.2 Range of usage & limitations

Item	Models	All models
Indoor return air temperature (Upper, lower limits)		Cooling operation: Approximately 21 to 32 °C
Outdoor air temperature (Upper, lower limits)		Cooling operation: Approximately 21 to 54 °C
Refrigerant line (one way) length		Max. 25m
Vertical height difference between outdoor unit and indoor unit		Max. 15m
Power source voltage		Rating $\pm 10\%$
Voltage at starting		Min. 85% of rating
Frequency of ON-OFF cycle		Max. 10 times/h
ON and OFF interval		Max. 3 minutes

2.3 Exterior dimensions

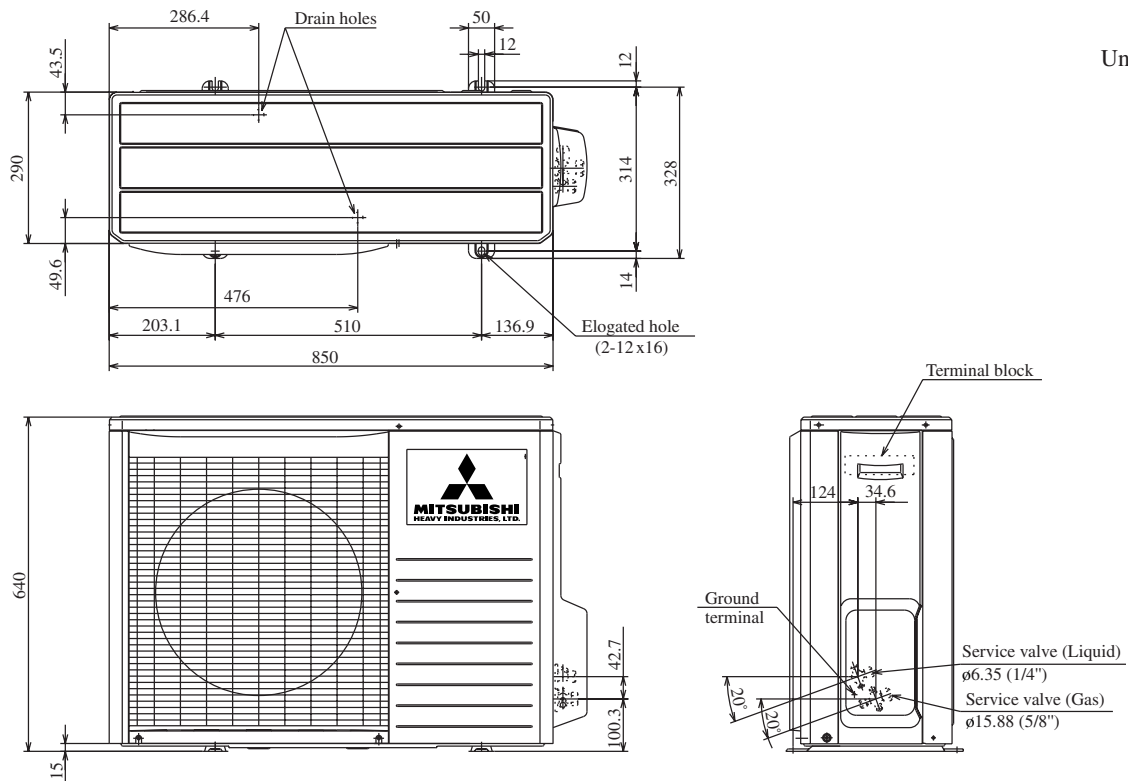
- (1) Indoor unit
Models SRK52CF-BN, 71CF-BN, 52CF-BP, 71CF-BP

Unit: mm



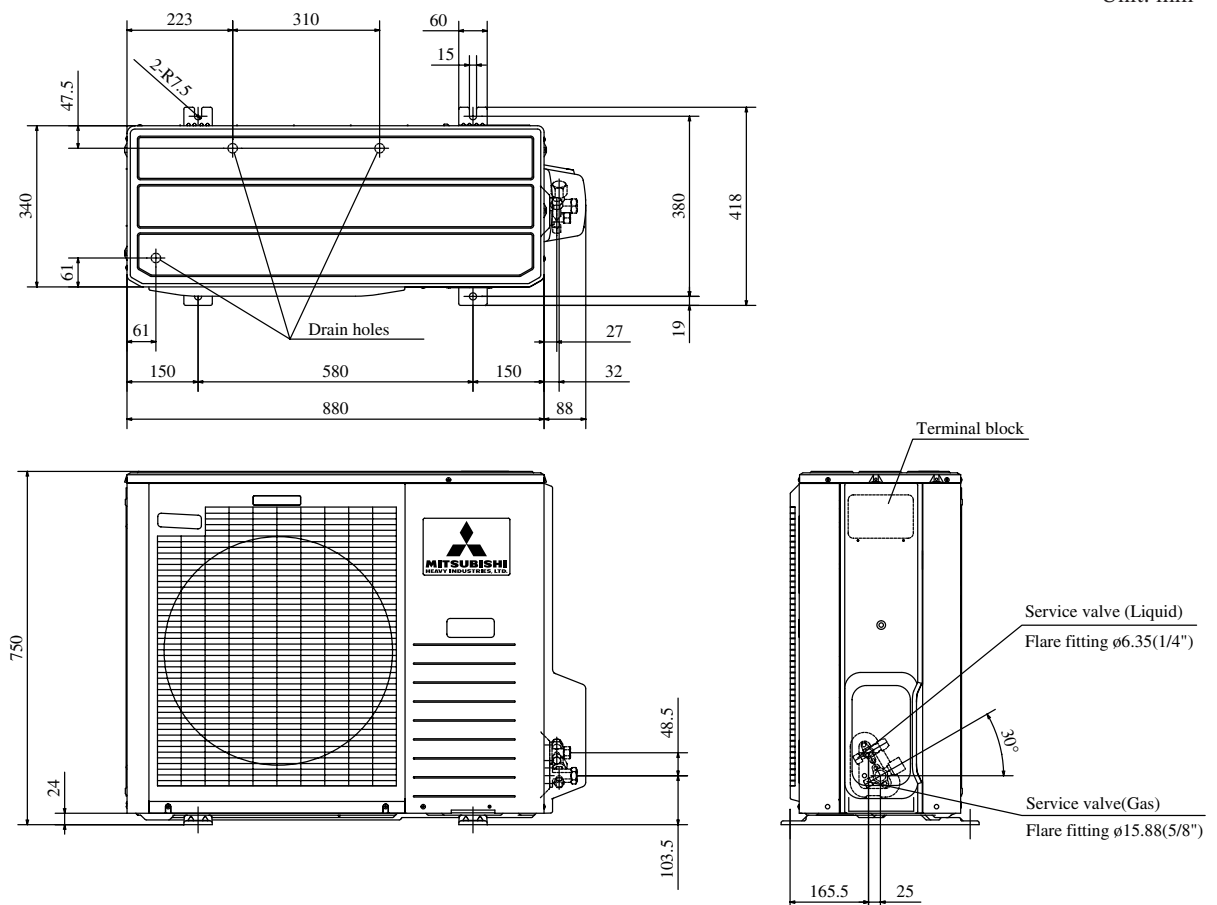
(2) Outdoor unit
Models SRC52CF-BN, 52CF-BP

Unit: mm



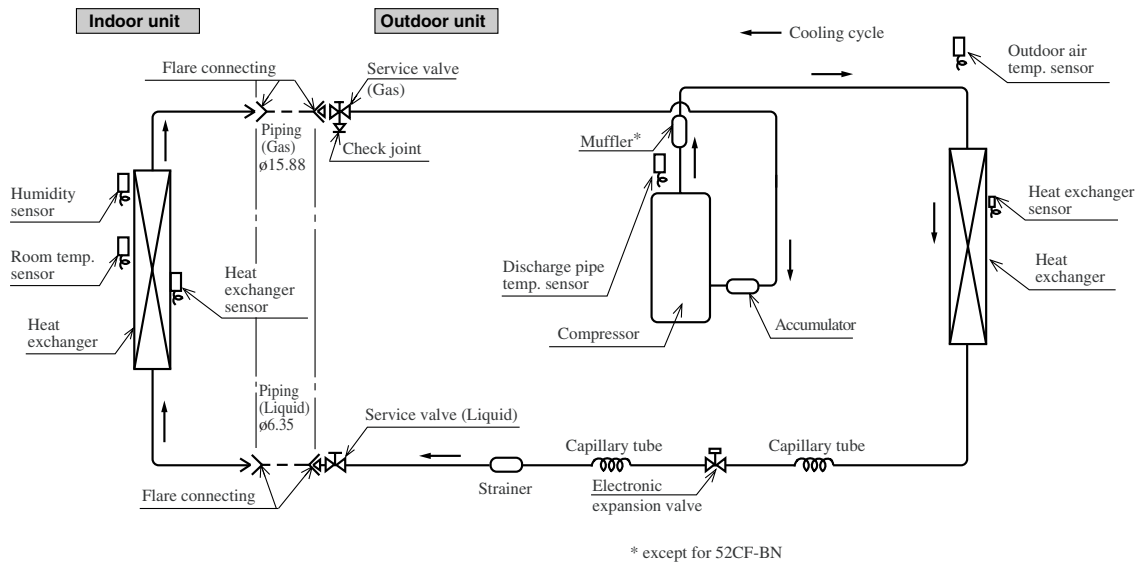
Models SRC71CF-BN, 71CF-BP

Unit: mm

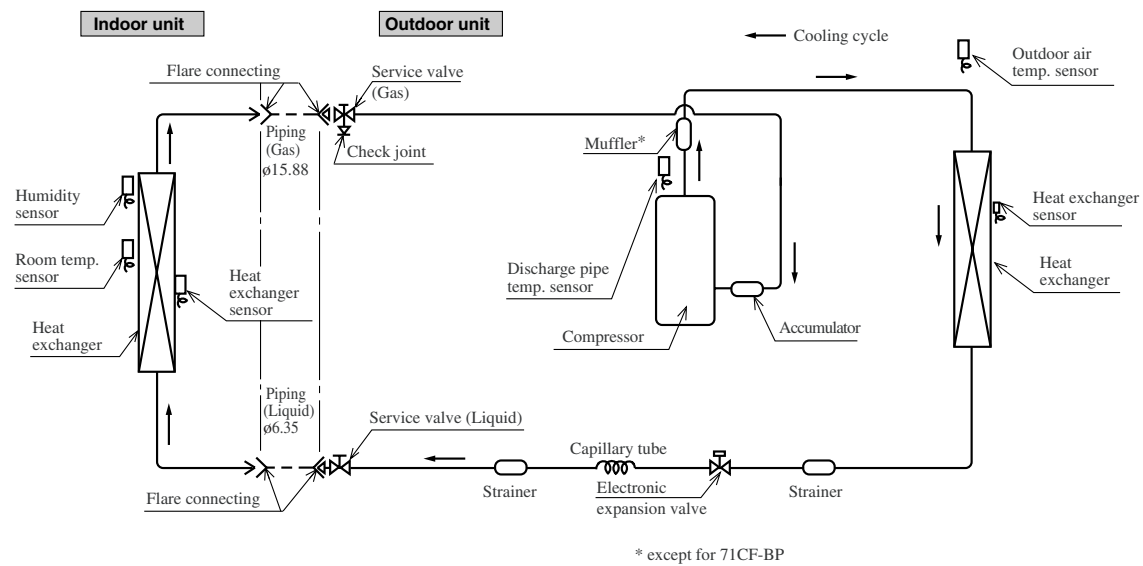


2.4 Piping system

Models SRK52CF-BN, 52CF-BP



Models SRK71CF-BN, 71CF-BP



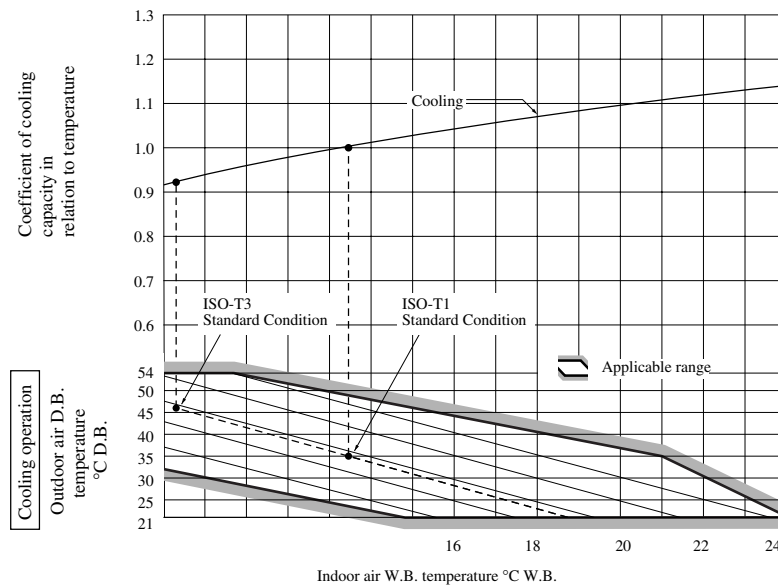
2.5 Selection chart

Correct the cooling capacity in accordance with the conditions as follows. The net cooling capacity can be obtained in the following way.

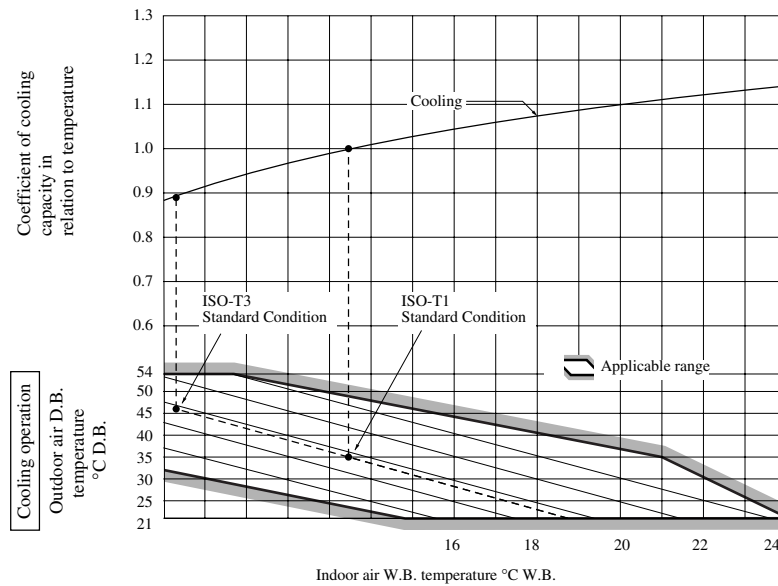
Net capacity = Capacity shown on specification × Correction factors as follows.

(1) Coefficient of cooling capacity in relation to temperatures

◆ SRK52CF-BN, 52CF-BP



◆ SRK71CF-BN, 71CF-BP



(2) Correction of cooling capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling capacity in relation to the one way piping length between the indoor and outdoor units.

Piping length [m]	7	10	15	20	25
Cooling	1.0	0.99	0.975	0.965	0.95

How to obtain the cooling capacity

Example : The net cooling capacity of the model SRK71CF-BN with the piping length of 15m, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is Net cooling capacity =

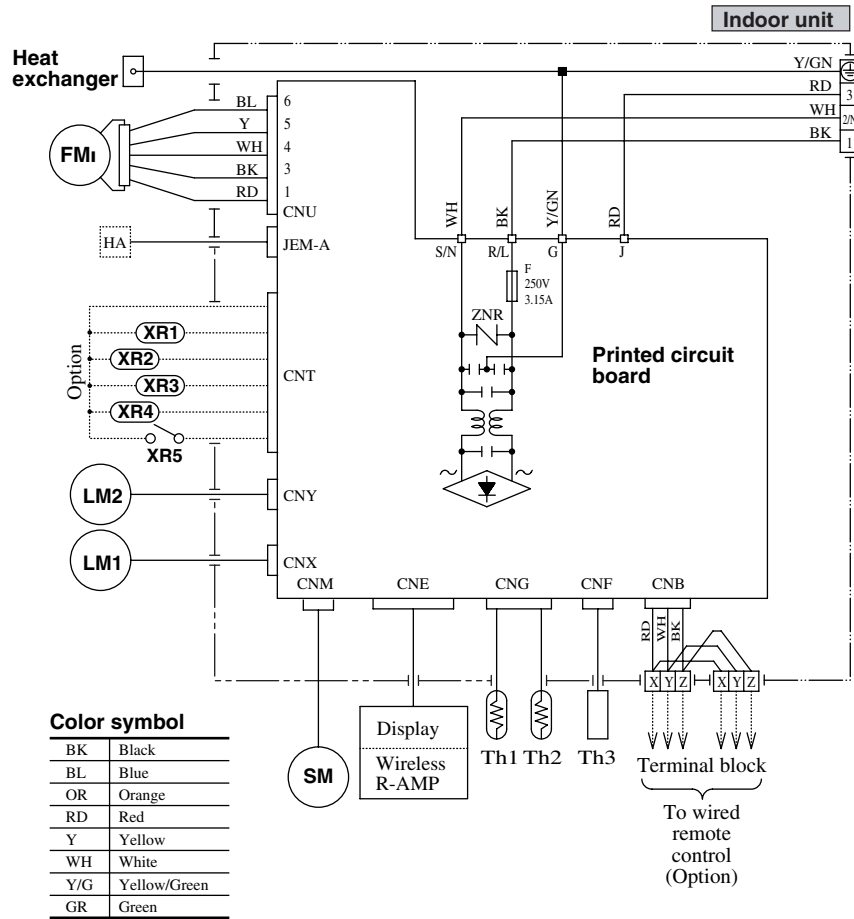
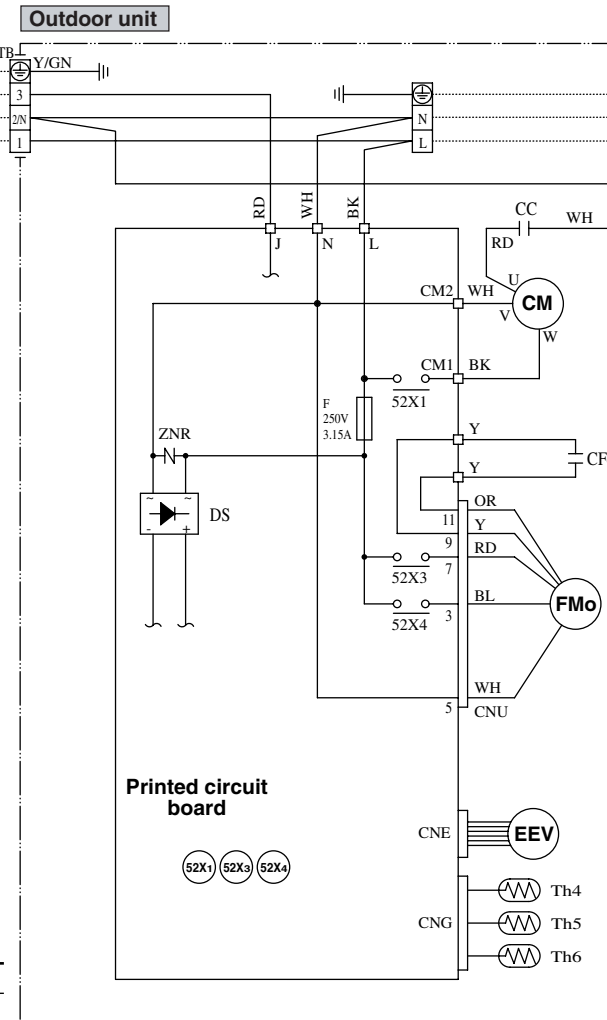
$$\begin{array}{ccccccc}
 & \uparrow & & \uparrow & & \uparrow & \\
 & \text{SRK71CF-BN} & & \text{Length 15m} & & \text{Factor by air} & \\
 & & & & & \text{temperatures} & \\
 7030 & \times & 0.975 & \times & 1.0 & = & 6854 \text{ W}
 \end{array}$$

3 ELECTRICAL DATA

3.1 Electrical wiring

Model SRK52-CF-BN

Power Source
1 Phase
220-240V 50Hz

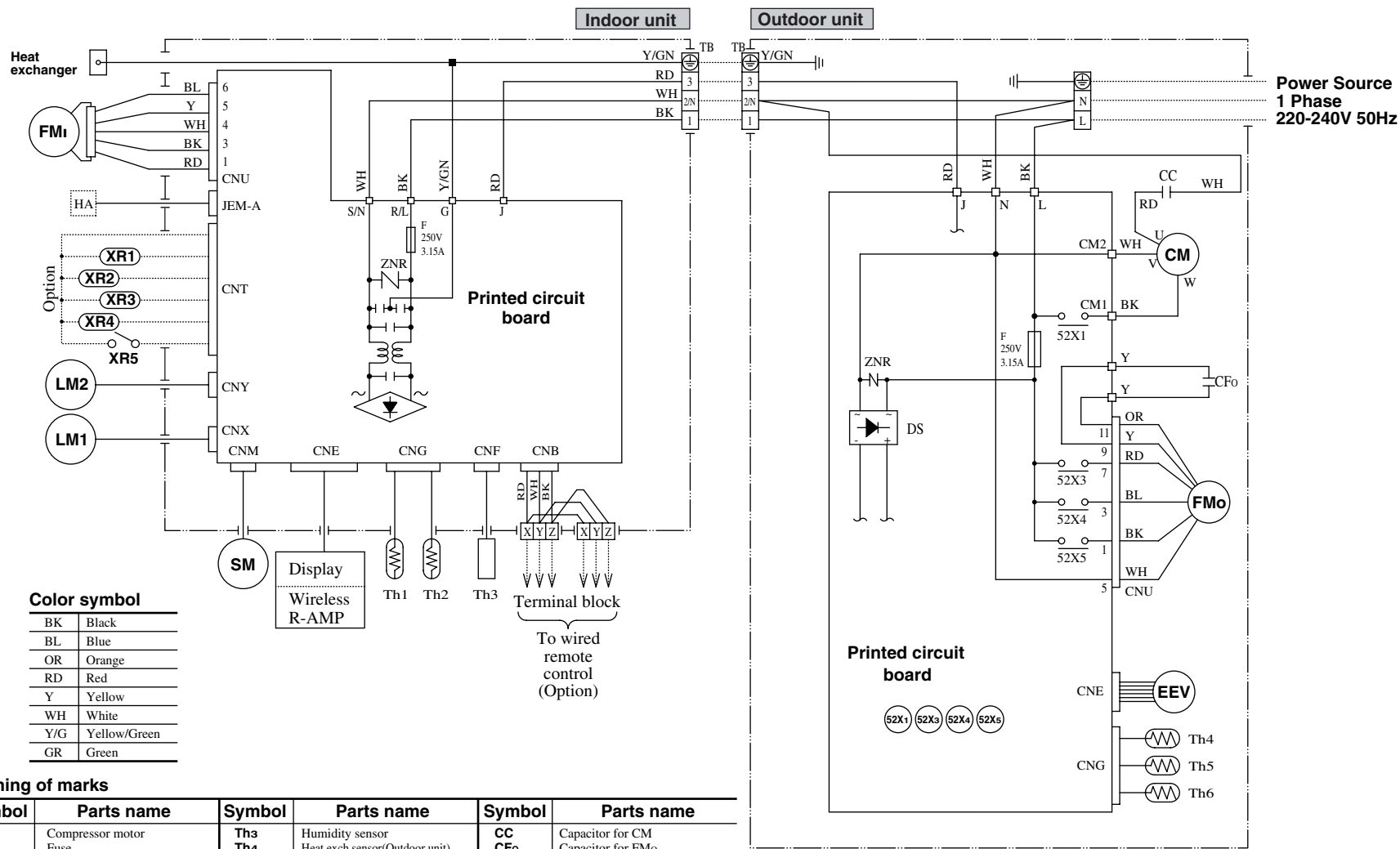


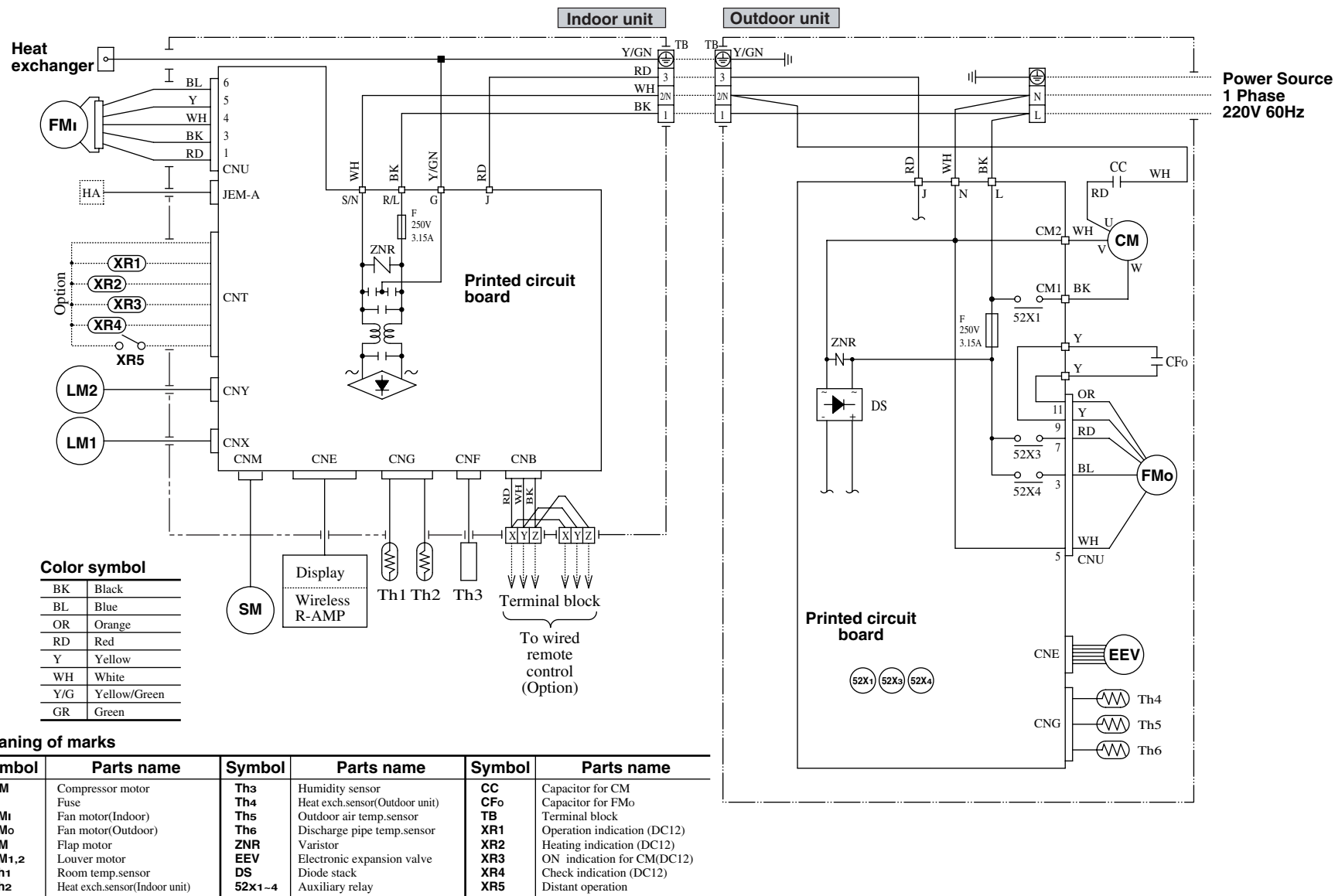
Color symbol

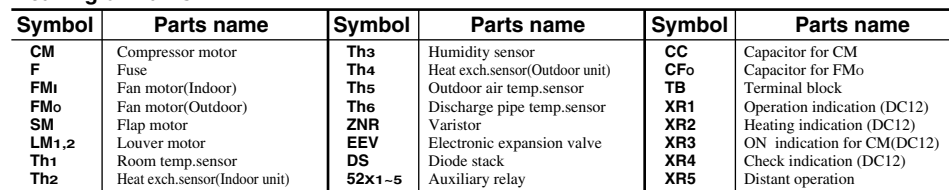
BK	Black
BL	Blue
OR	Orange
RD	Red
Y	Yellow
WH	White
Y/G	Yellow/Green
GR	Green

Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CM	Compressor motor	Th3	Humidity sensor	CC	Capacitor for CM
F	Fuse	Th4	Heat exch.sensor(Outdoor unit)	CFo	Capacitor for FMO
FMI	Fan motor(Indoor)	Th5	Outdoor air temp.sensor	TB	Terminal block
FMO	Fan motor(Outdoor)	Th6	Discharge pipe temp.sensor	XR1	Operation indication (DC12)
SM	Flap motor	ZNR	Varistor	XR2	Heating indication (DC12)
LM1,2	Louver motor	EEV	Electronic expansion valve	XR3	ON indication for CM(DC12)
Th1	Room temp.sensor	DS	Diode stack	XR4	Check indication (DC12)
Th2	Heat exch.sensor(Indoor unit)	52x1-4	Auxiliary relay	XR5	Distant operation







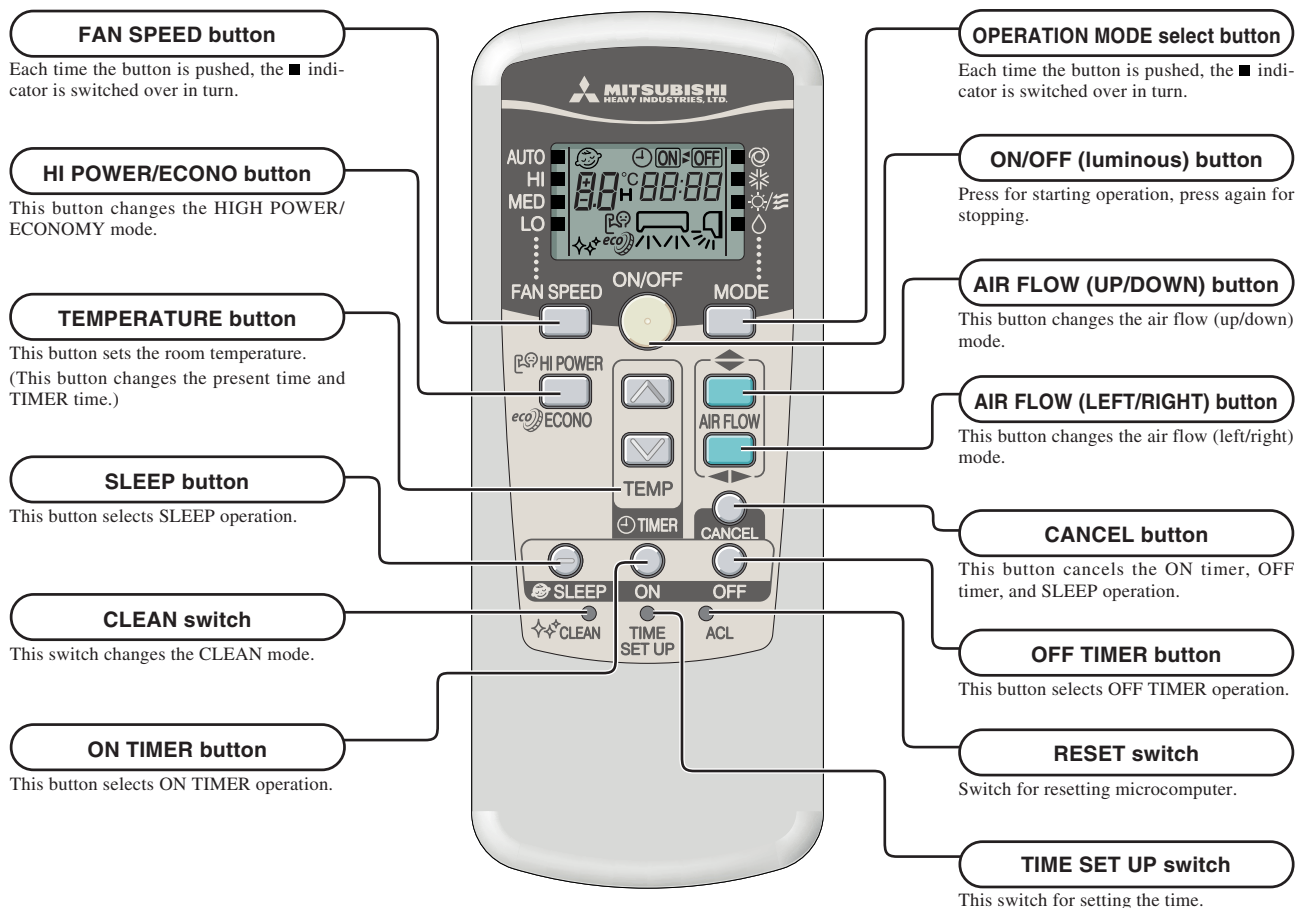
4. OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

4.1 Operation control function by remote control switch

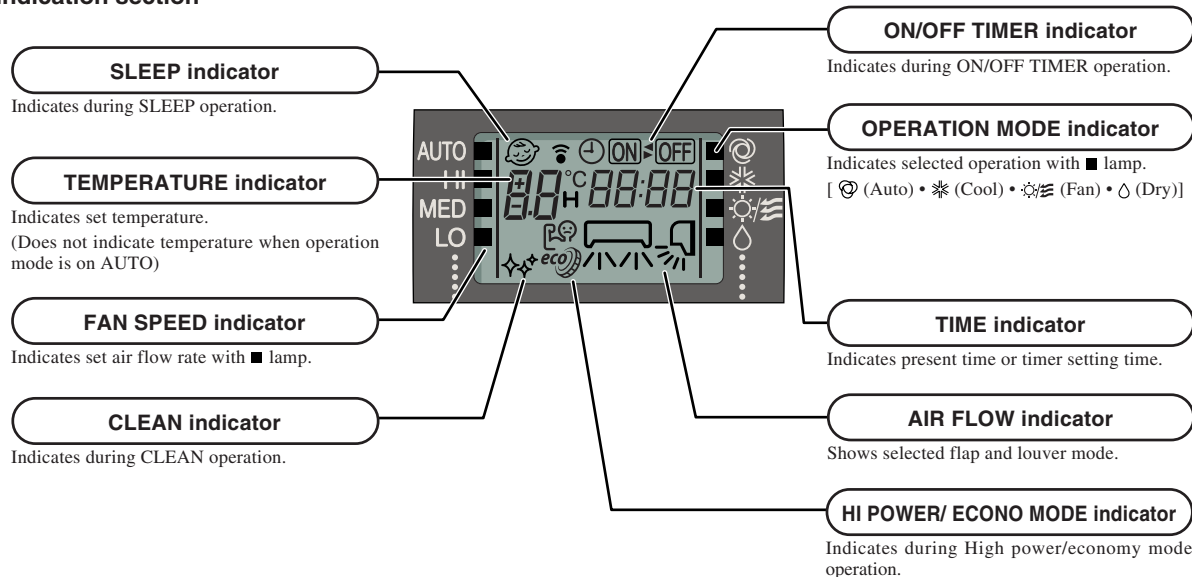
(1) Wireless remote control

Models All models

◆ Operation section



◆ Indication section



(2) Wired remote control (Optional parts)

The figure below shows the remote control with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation.

Characters displayed with dots in the liquid crystal display area are abbreviated.

Note (1) The SRK models don't support the switches and functions displayed in [].

Pull the cover downward to open it.

Central control display

Displayed when the air conditioning system is controlled by the option controller.

Timer operation display

Displays the settings related to timer operation.

Temperature setting switches

These switches are used to set the temperature of the room.

TIMER switch

This switch is used to select a timer mode.
(The comfortable timer or sleep operation cannot be selected.)

Timer setting switches

These switches are used to set the timer mode and time.

[GRILL switch]

This switch has no function.
When this switch is pressed, INVALID OPER (Invalid Operation) is displayed, but it does not mean a failure.

AIR CON No. (Air conditioning system No.) switch

Displays the number of the connected air conditioning system.
("00" appears.)

[CHECK switch]

This switch is used at servicing.

[TEST switch]

This switch is used during test operation.

[Vent indicator]

Indicates operation in the ventilation mode.

Weekly timer display

Displays the settings of the weekly timer.

Operation setting display area

Displays setting temperature, airflow volume, operation mode and operation message.

Operation/Check indicator light

During operation: Lit in green
In case of error: Flashing in red

Operation/Stop switch

This switch is used to operate and stop the air conditioning system.
Press the switch once to operate the system and press it once again to stop the system.

MODE switch

This switch is used to switch between operation modes.
(The clean operation cannot be selected.)

FAN SPEED switch

This switch is used to set the airflow volume.
(AUTO, HI POWER or ECONO cannot be selected.)

[VENT switch]

Switch that operates the connected ventilator.

LOUVER switch

This switch is used to operate/stop the swing louver.
(UP/down swing only)

SET switch

This switch is used to apply the timer operation setting.
This switch is also used to make silent mode operation settings.

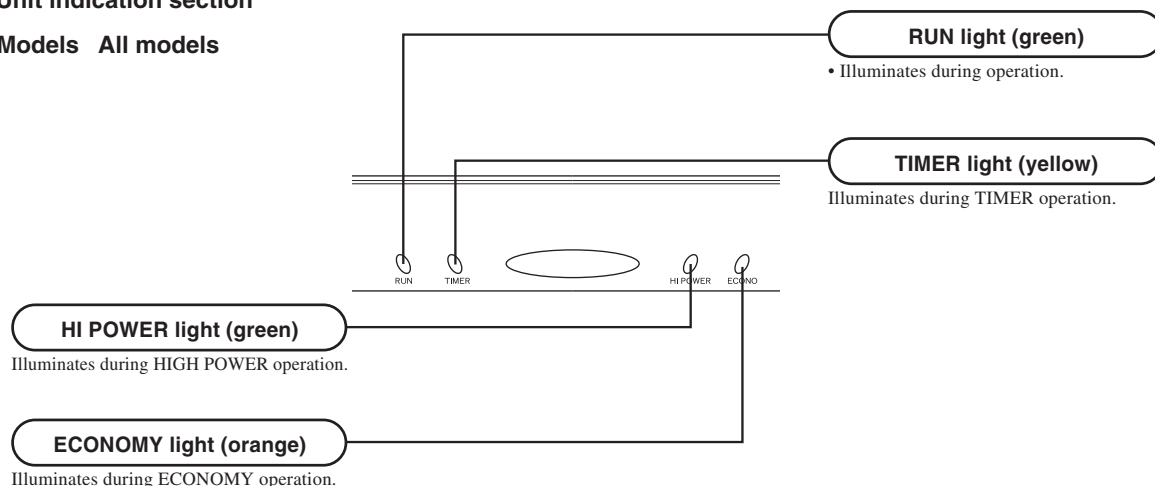
[RESET switch]

Press this switch while making settings to go back to the previous operation.
This switch is also used to reset the "FILTER CLEANING" message display.
(Press this switch after cleaning the air filter.)

* If you press any of the switches above and "INVALID OPER" is display, the switch has no function.
But it does not mean a failure.

(3) Unit indication section

Models All models



4.2 Unit ON/OFF button

When the remote control batteries become weak, or if the remote control is lost or malfunctioning, this button may be used to turn the unit on and off.

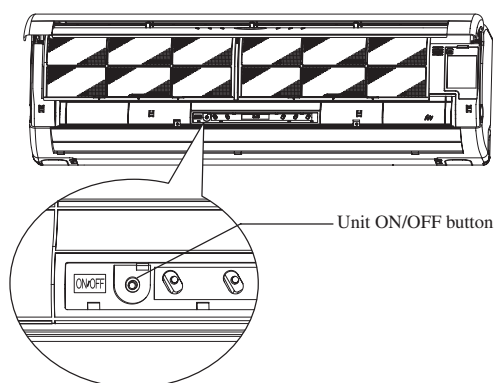
(1) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(2) Details of operation

The unit will go into the automatic mode in which it automatically determines, from room temperature (as detected by sensor), whether to go into the cooling or thermal dry modes.

Function	Room temperature setting	Fan speed	Flap	Timer switch
Operation mode				
Cooling	About 24°C	Auto	Auto	Continuous
Thermal dry	About 24°C			



4.3 Power blackout auto restart function

(1) Power blackout auto restart function is a function that records the operational status of the air-conditioner immediately prior to it being switched off by a power cut, and then automatically resumes operations at that point after the power has been restored.

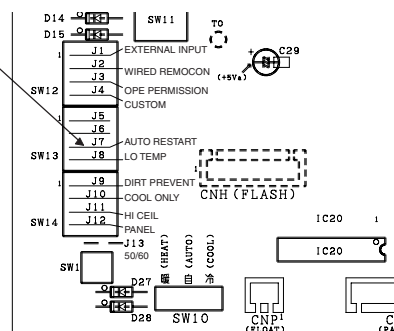
(2) The following settings will be cancelled:

(a) Timer settings

(b) High-power operations

- Notes
- (1) The power blackout auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.
 - (2) When power failure occurs, the timer setting is cancelled. Once power is resumed, reset the timer.
 - (3) If the jumper wire (J7) "AUTO RESTART" is cut, auto restart is disabled. (See the diagram at right)

Jumper wire (J7)



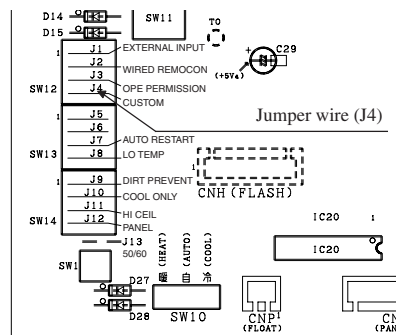
4.4 Custom cord switching procedure

If two wireless remote controls are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's control box and the remote control using the following procedure. Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.

(1) Modifying the indoor unit's printed circuit board

Take out the printed circuit board from the control box and cut off jumper wire (J4) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.



4.6 Comfortable timer setting

If the timer is set at ON when the operation select switch is set at the cooling, or the cooling in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the room temperature at the setting time (temperature of room temperature sensor) and the setting temperature. (Max. 60 minutes)

Operation mode	Operation start time correction value (Min.)		
At cooling	$3 < \text{Room temp.} - \text{Setting temp.}$	$1 < \text{Room temp.} - \text{Setting temp.} \leq 3$	$\text{Room temp.} - \text{Setting temp.} \leq 1$
	+5	No change	-5

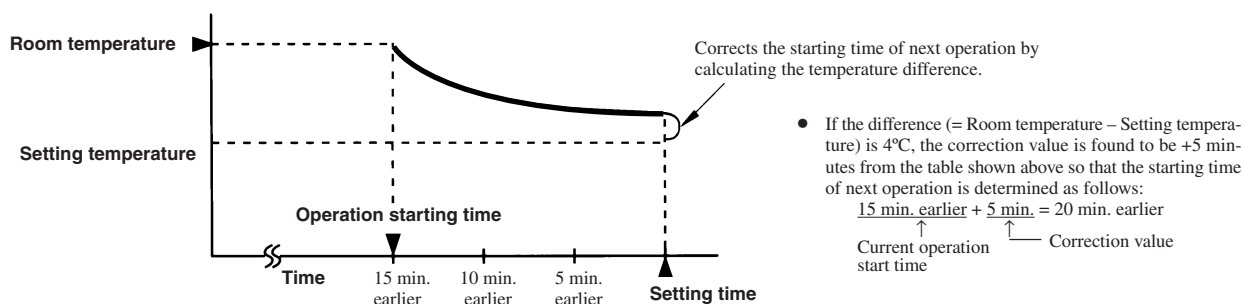
Notes (1) At 5 minutes before the timer ON time, operation starts regardless of the temperature of the room temperature sensor (Th1).

(2) This function does not actuate when the operation select switch is set at the dehumidifying as well as the dehumidifying in the auto mode.

However, the operation of item (1) above is performed during the dehumidifying in the auto mode.

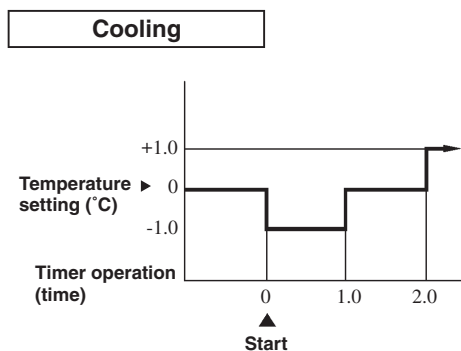
(3) During the comfortable timer operation, both the run light and timer light illuminate and the timer light goes off after expiration of the timer, ON setting time.

(Example) Cooling



4.7 Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled as shown in the following chart with respect to the set temperature.



4.8 Outline of cooling operation

(1) Operation of major functional components

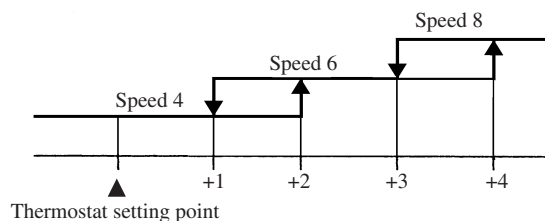
Functional components \ Item	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an anomalous stop.
Indoor fan motor	ON	ON	OFF
Flap and louver	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
Outdoor fan motor	Depending on the stop mode	ON	Depending on the stop mode
Electric expansion valve		Depending on the EEV control	

(2) Fan speed switching

Fan speed switching \ Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 8	Speed 6	Speed 4
Swing flap or louver		Speed 8	Speed 6	Speed 4
Swing stop		Speed 8	Speed 6	Speed 4

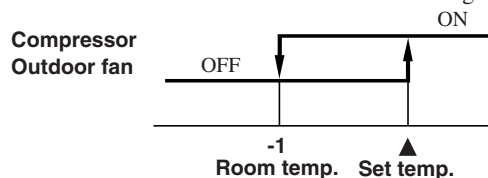
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the thermostat setting as shown below.



(3) Thermostat operation

The compressor and outdoor fan are turned on and off as shown below according to the temperature setting.



(4) HIGH POWER operation ("HI POWER" button on the remote control : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 9 fixed
Outdoor unit fan	ON
Compressor	ON

- Notes (1) Room temperature is not adjusted during the HIGH POWER operation.
(2) Protective functions will actuate with priority even during the HIGH POWER operation.

(5) ECONOMY operation ("ECONO" button on the remote control : ON)

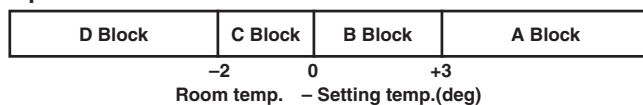
The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 4.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

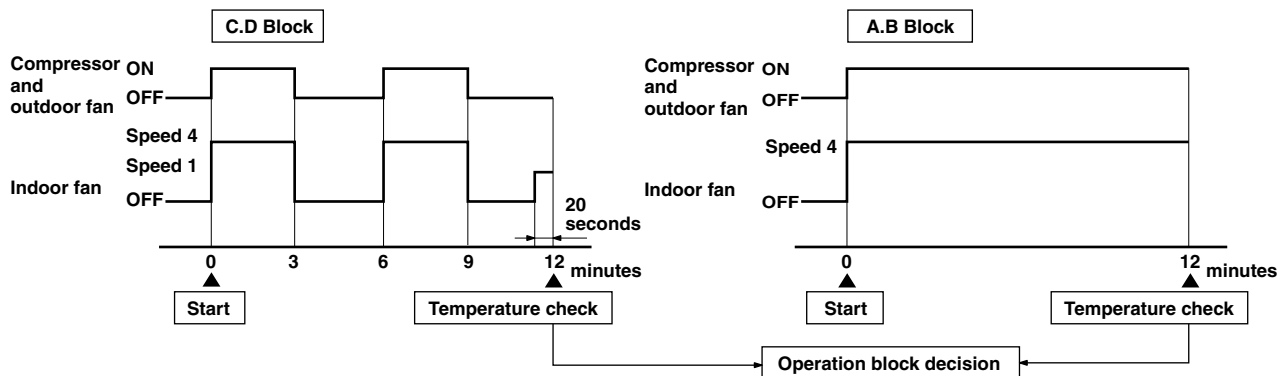
4.9 Outline of dehumidifying operation

- (1) Choose the appropriate operation block area by the difference between room temperature and thermostat setting temperature as shown below.

• Operation block area



- (2) Start up operation

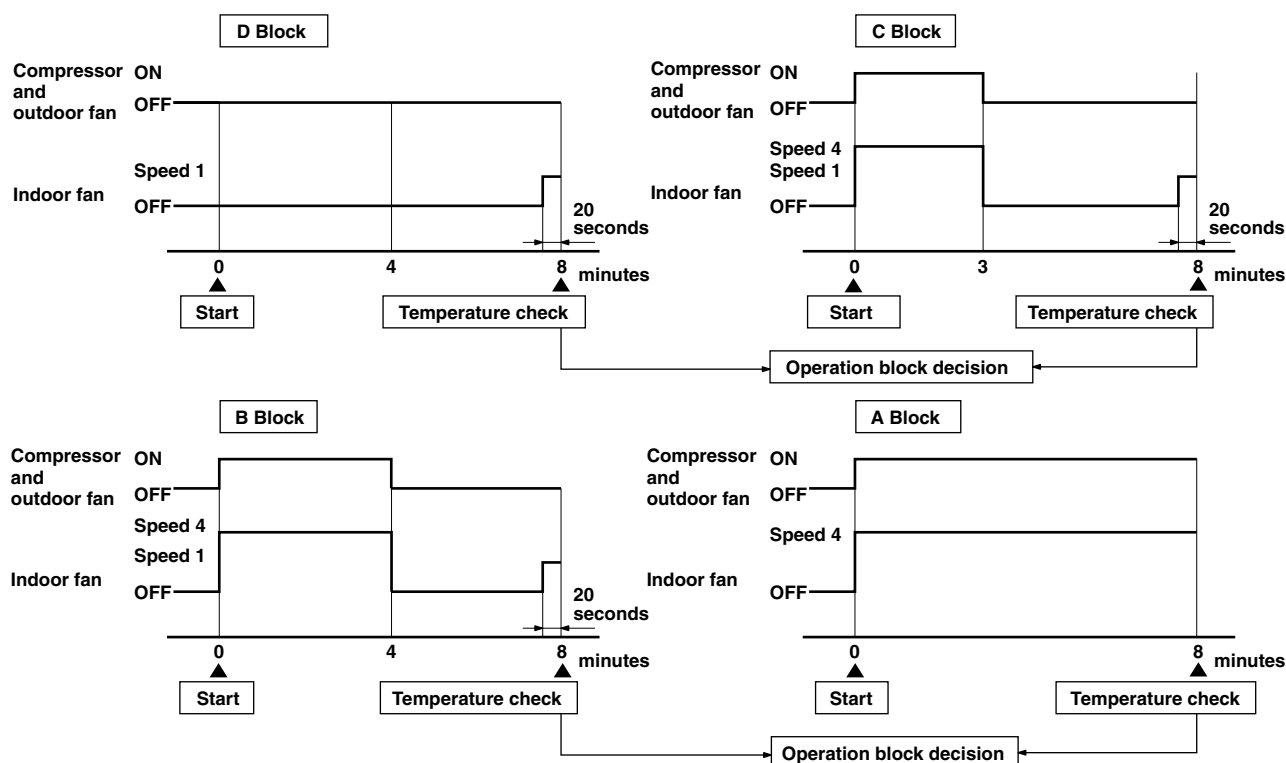


Note (1) Thermostat operation is performed in A, B Block. When compressor and indoor fan stop by thermostat operation within 12 minutes from start, temperature check is performed by operating indoor fan at speed 1 for 20 seconds before finishing 12 minutes and allowing decision of next operation block.

- (3) DRY operation

After finishing start up operation described in (2) above, thermal dry operation is performed at 8 minutes intervals, according to the difference between room temperature and thermostat setting temperature as shown below.

Beside, 1 cycle of this operating time consists of 8 minutes, 7 cycle operation is performed then.



- (4) ECONOMY operation ("ECONO" button on the remote control : ON)

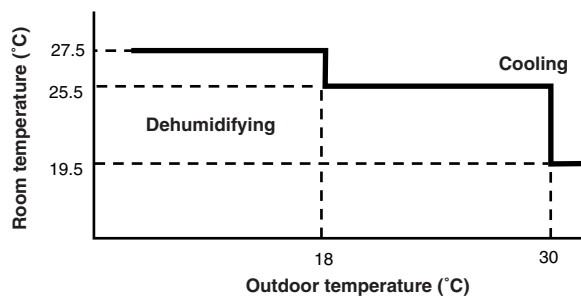
The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 4 .

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

4.10 Outline of automatic operation

(1) Determination of operation mode

The unit checks the room temperature and the outdoor air temperature after operating the indoor and outdoor blowers for 20 seconds, determines the operation mode and the room temperature setting correction value, and then begins in the automatic operation.



- (2) Within 30 minutes after either auto or manual operation stops, if auto operation is started, or if you switch to auto operation during manual operation, the system runs in the previous operation mode.
- (3) The temperature is checked 1 time in 30 minutes after the start of operation, and if the judgment differs from the previous operation mode, the operation mode changes.

4.11 Set temperature selection

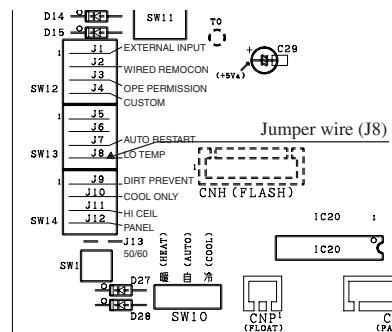
If the LO TEMP on the indoor unit's printed circuit board is modified, the unit can lower the set temperature 2° lower than the set temperature in the remote control's display.

(1) Modifying the indoor unit's printed circuit board

Take out printed circuit board from the control box and cut jumper wire (J8) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.

- (2) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote control and the setting temperature.



Signals of wireless remote control (Display)	AUTO	-6	-5	-4	-3	-2	-1	±0	+1	+2	+3	+4	+5	+6
COOL, DRY		18	19	20	21	22	23	24	25	26	27	28	29	30
Setting temperature (J8 shortcircuit)		18	19	20	21	22	23	24	25	26	27	28	29	30
Setting temperature (J8 release)		16	17	18	19	20	21	22	23	24	25	26	27	28

4.12 Outline of fan operation

(1) Operation of major functional components

Fan speed switching Functional components	High power	AUTO	HIGH	MED	LOW	ECONO
52C	OFF					
Indoor fan motor	Speed 9	Speed 8	Speed 8	Speed 6	Speed 4	Speed 2
Outdoor fan motor	OFF					
Flap and louver	Depend on the flap and louver control					

(2) HIGH POWER operation (“HI POWER” button on the remote control : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 9 fixed
Outdoor unit fan	OFF
Compressor	OFF

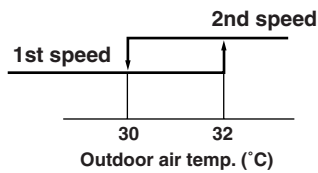
Note (1) Protective functions will actuate with priority even during the HIGH POWER operation.

4.13 Regulation of outdoor air flow

The fan operates as follows according to the outdoor air temperature.

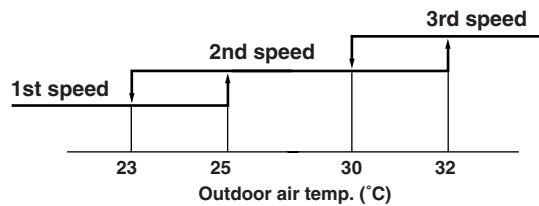
◆ SRK52CF-BN, 52CF-BP

Cooling, thermal dry

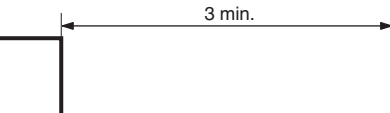
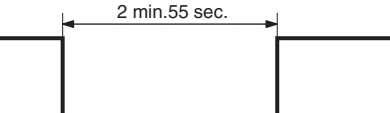


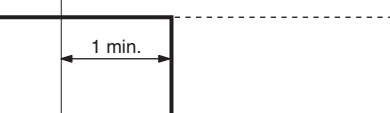







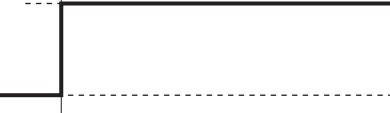

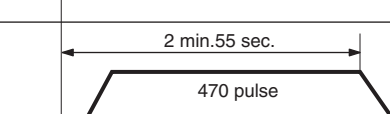
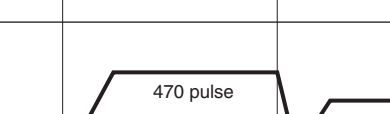


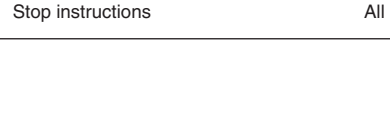



◆ SRK71CF-BN, 71CF-BP

Cooling, thermal dry



4.14 Stop mode

Functional components	Operation	When the complete stop command given, when there is and abnormal stoppage command	When stoppage occurs due to thermostat operation, switching operations and protective function operations
		Cooling,cooling oriented dehumidifying	Cooling,cooling oriented dehumidifying
Compressor	ON		
	OFF		
Outdoor unit fun	ON		
	OFF		
Indoor unit fun	ON		
	OFF		
Flap	Fully closed		
	Set location		
EEV	150 pulse		
	EEV control		
		<div>△</div> Stop instructions	<div>△</div> All stop
			<div>△</div> Stop instructions
			<div>△</div> Restart

4.15 External control (remote display)/control of input signal

Make sure to connect the wired remote control unit. Control of input signal is not available without the wired remote control unit.

(1) External control (remote display) output

Following output connectors (CNT) are provided on the printed circuit board of indoor unit.

- (a) Operation output: Power to engage DC 12V relay (provided by the customer) is outputted during operation.
- (b) Heating output: Power to engage DC 12V relay (provided by the customer) is outputted during the heating operation.
- (c) Compressor ON output: Power to engage DC 12V relay (provided by the customer) is outputted while the compressor is operating.
- (d) Error output: When any error occurs, the power to engage DC 12V relay (provided by the customer) is outputted.

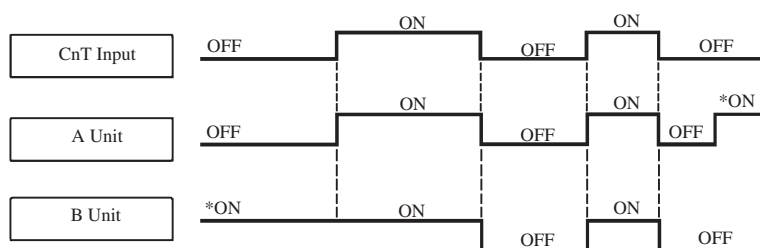
(2) Control of input signal

Control of input signal (switch input, timer input) connectors (CNT) are provided on the control circuit board of the indoor unit.

However, when the operation of air conditioner is under the Center Mode, the remote control by CnT is invalid.

- (a) If the factory settings (Jumper wire J1 EXTERNAL INPUT on the PCB) are set, or “LEVEL INPUT” is selected in the wired remote control’s indoor unit settings.

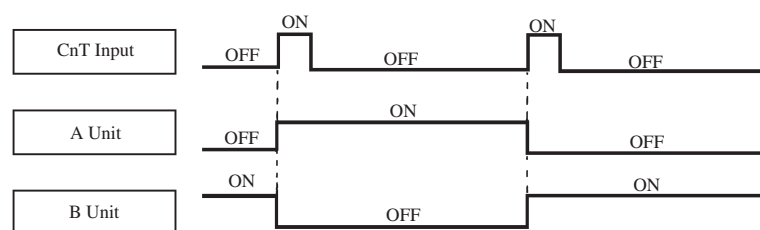
- 1) Input signal to CnT OFF → ON – – – Air conditioner ON
- 2) Input signal to CnT ON → OFF – – – Air conditioner OFF



Note (1) The ON with the * mark indicates an ON operation using the remote control unit switch, etc.

- (b) When Jumper wire J1 on the PCB of indoor unit is cut at the field or “PULSE INPUT” is selected in the wired remote control’s indoor unit settings.

Input signal to CnT becomes valid at OFF → ON only and the motion of air conditioner [ON/OFF] is inverted.



4.16 Operation permission/prohibition control

The air conditioner operation is controlled by releasing the jumper wire (J3) on the indoor control board and inputting the external signal into the CnT.

- (1) **The operation mode is switched over between Permission and Prohibition by releasing the jumper wire (J3) on the indoor control board.**

When the jumper wire (J3) is short circuited	When the jumper wire (J3) is released
Normal operation is enable (when shipping) When CnT input is set to ON, the operation starts and if the input is set to OFF, the operation stops. For the CnT and remote control inputs, the input which is activated later has priority and can start and stop the operation.	Permission / Prohibition mode When Cnt input is set to ON, the operation mode is changed to permission and if input is set to OFF the operation is prohibited.

- (2) **When the CnT input is set to ON (Operation permission)**

- (a) The air conditioner can be operated or stopped by the signal from the remote control signal line.
(When the "CENTER" mode is set, the operation can be controlled only by the center input.
- (b) When the CnT input is changed from OFF to ON, the air conditioner operation mode is changed depending on the status of the jumper wire (J1) on the indoor control board.

When the jumper wire (J1) is short circuited	When the jumper wire (J1) is released
The signal (a) above starts the air conditioner. (Shipping status)	When the CnT input is set to ON, the air conditioner starts operation. After that, the operation of the air conditioner depends on (a) above. (Local status)

- (3) **When the CnT input is set to OFF (Prohibition)**

- (a) The air conditioner cannot be operated or stopped by the signal from the remote control signal line.
- (b) The air conditioner operation is stopped when the CnT input is changed from ON to OFF.

- (4) **When the operation permission / prohibition mode is set to effective by the indoor function setting selected by the remote control, the operation depends on (1) above.**

4.17 Protective control function

- (1) **Frost prevention for indoor heat exchanger** (During cooling or dehumidifying)

- (a) **Operating conditions**

- Indoor heat exchanger temperature sensor (detected with Th2) is lower than 2.5°C.
- 3 minutes elapsed after the start of operation.

- (b) **Detail of frost prevention operation**

Compressor	OFF
Indoor fan	Protects the fan tap just before frost prevention control.
Outdoor fan	Depending on the stop mode

- (c) **Reset condition:** Indoor heat exchanger temperature sensor (Th2) is higher than 15°C.

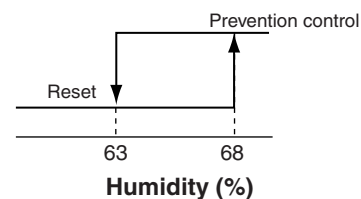
(2) Dew condensation prevention control [Cooling (including automatic), cooling oriented dehumidifying operation]

(a) Operating condition: When the following conditions are met after 5 minutes or more of continuous operation after operation starts.

- The humidity sensor value is 68% or higher

(b) Operation contents

- 1) Command of the electronic expansion valve.
- 2) When such a command is continued for 30 minutes or more, air direction controls will be as listed below:



UP/ DOWN air scroll	Flap swing, UP/DOWN air scroll	Executes the command to the left.
	Situations besides the ones described above	Controls the level of the UP/DOWN flap.
LEFT/ RIGHT air scroll	Louver swing, LEFT/RIGHT air scroll,	Executes the command to the left.
	Multi-directional Air Flow	
	Situations besides the ones described above	Controls the front of the LEFT/RIGHT louver .

(c) Reset condition: When the following condition is satisfied.

- The humidity sensor value is less than 63%.

(3) Indoor fan motor protection

When the air-conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

Timer light illuminates simultaneously and the run light flashing 6 times at each 8-second.

(4) Three-minute forced operation

When the compressor begins operating the thermal operation is not effective for 3 minutes, so operation continues as is in the operation mode. (After 3 minutes has passed the thermal operation is effective.)

However, stopping the compressor via a stop signal or protection control has priority.

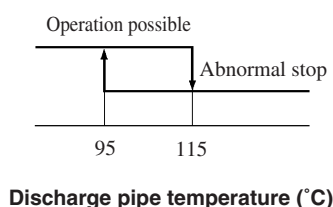
(5) Abnormality of outdoor unit

When the indoor heat exchanger temperature does not fall to 25°C or below for 40 minutes after 5 minutes have elapsed since the compressor operation start, the abnormality stop occurs. (The timer light flashes 2 times.)

(6) Compressor overheat protection

If the discharge pipe temperature (sensed by Th6) exceeds 115°C, the compressor stops. If the temperature is 95°C or lower after a 3-minute delay, it starts again, but if this function is reactivated again within 60 minutes, it results in an abnormal stop.

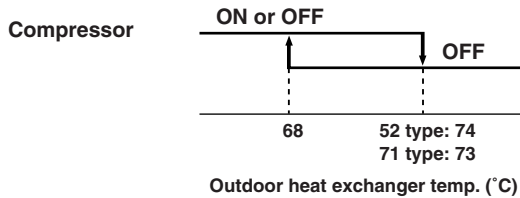
(Run light : ON, Timer light : 5 time flash)



(7) High-pressure control

The outdoor heat exchanger temperature sensor detection temperature controls the compressor.

- When the outdoor heat exchanger temperature is \geq (52 type: 74°C, 71 type: 73°C)



(8) Serial signal transmission error protection

- (a) **Purpose:** Prevents malfunction resulting from error on the indoor \leftrightarrow outdoor signals.
- (b) **Detail of operation:** If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continuously for 1 minute and 55 seconds, the compressor is stopped.
- After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.
- (RUN light: ON, TIMER light: 6 time flash)

(9) Sensor disconnection (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor temperature, discharge pipe)

(a) Room temperature sensor

If the temperature detected by the room temperature sensor is -20°C or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed. (Run light: 2 time flash, Timer light: ON)

(b) Indoor heat exchanger temperature sensor

If the temperature detected by the indoor heat exchanger temperature sensor is -20°C or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

(Run light : 1 time flash, Timer light : ON)

(c) Outdoor heat exchanger temperature sensor

If the temperature detected by the outdoor heat exchanger temperature sensor is -64°C or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

(Run light : keep flashing, Timer light : 2 time flash)

(d) Outdoor air temperature sensor

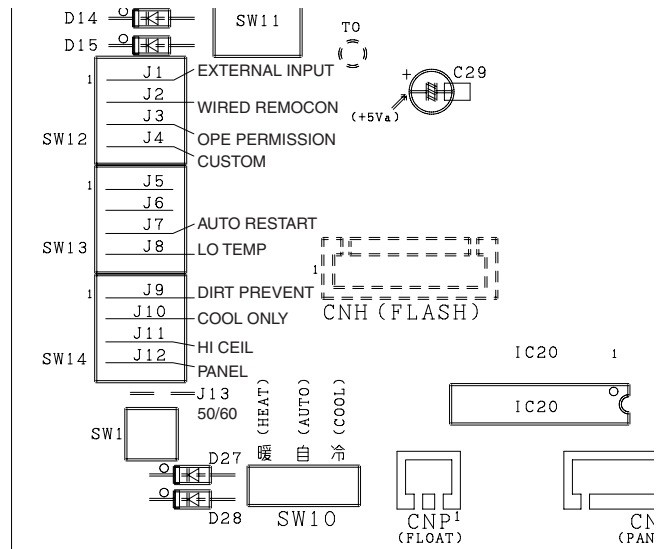
If the temperature detected by the outdoor air temperature sensor is -64°C or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed. (Run light : keep flashing, Timer light : 1 time flash)

(e) Discharge pipe temperature sensor

After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe temperature sensor detected -64°C for 15 seconds, the compressor stops. After a 3-minute delay, it restarts, but if an abnormality is detected 4 times continuously, the air-conditioner is stopped fully and an error indication is displayed. (Run light : keep flashing, Timer light : 4 time flash)





4.18 List of indoor unit jumper selections

Jumper No.	Indication on Circuit Board	Function Name	With Factory Jumper Settings (short circuited)	No Jumper (Open)	Reference Page
J1	EXTERNAL INPUT	External input switching	LEVEL INPUT	PULSE INPUT	Page 24
J2	WIRED REMOCON	Wired remote control	Disabled	Enabled Wireless Remote Control (Disabled)	Page 37
J3	OPE PERMISSION	Operation permission/prohibition	Normal operation	Enabled	Page 25
J4	CUSTOM	Custom cord switching	Normal	Select	Page 17
J5	BLANK	No function			
J6	BLANK				
J7	AUTO RESTART	Auto restart	Enabled	Disabled	Page 16
J8	LO TEMP	Set Temperature Selection	Disabled	Enabled	Page 21
J9	DIRT PREVENT	No function			
J10	COOL ONLY				
J11	HI CEIL				
J12	PANEL				
J13	50/60				




5. APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these “Safety Precautions” first then accurately execute the installation work.
- Though the precautionary points indicated herein are divided under two headings,  and , those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the  section. However, there is also a possibility of serious consequences in relationship to the points listed in the  section as well. In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner’s manual. Moreover, ask the customer to keep this sheet together with the owner’s manual.





WARNING

- To disconnect the appliance from the mains supply this appliance must be connected to the mains by means of a circuit breaker or a switch (use a recognized 20A) with a contact separation of at least 3mm.
- The appliance shall be installed in accordance with national wiring regulations.
- This system should be applied to places as households, residences and the like. Application to inferior environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the company which sold you the equipment or to a professional contractor. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the installation manual. Again, improper installations can result in water leakage, electric shocks and fires.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the unit.
- For electrical work, please see that a licensed electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used.
Insufficient power source circuit capacity and defective installment execution can be the cause of electric shocks and fires.
- Accurately connect wiring using the proper cable, and insure that the external force of the cable is not conducted to the terminal connection part, through properly securing it. Improper connection or securing can result in heat generation or fire.
- Take care that wiring does not rise upward, and accurately install the lid/service panel. It's improper installation can also result in heat generation or fire.
- When setting up or moving the location of the air conditioner, do not mix air etc. or anything other than the designated refrigerant (R22) within the refrigeration cycle.
Rupture and injury caused by abnormal high pressure can result from such mixing.
- Always use accessory parts and authorized parts for installation construction. Using parts not authorized by this company can result in water leakage, electric shock, fire and refrigerant leakage.
- Ventilate the work area when refrigerant leaks during the operation. 
Coming in contact with fire, refrigerant could generate toxic gas.
- Confirm after the foundation construction work that refrigerant does not leak.
If coming in contact with fire of a fan heater, a stove or movable cooking stove, etc., refrigerant leaking in the room could generate toxic gas.



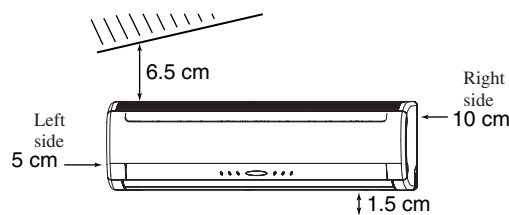
CAUTION

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or a telephone ground wire.
Improper placement of ground wires can result in electric shock. 
- The installation of an earth leakage breaker is necessary depending on the established location of the unit.
Not installing an earth leakage breaker may result in electric shock.
- Do not install the unit where there is a concern about leakage of combustible gas. 
The rare event of leaked gas collecting around the unit could result in an outbreak of fire.
- For the drain pipe, follow the installation manual to insure that it allows proper drainage and thermally insulate it to prevent condensation. Inadequate plumbing can result in water leakage and water damage to interior items.

5.1 Selection of location for installation

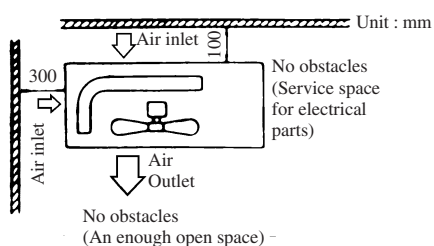
(1) Indoor unit

- Where there is no obstructions to the air flow and where the cooled air can be evenly distributed.
- A solid place where the unit or the wall will not vibrate.
- A place where there will be enough space for servicing. (Where space mentioned right can be secured)
- Where wiring and the piping work will be easy to conduct.
- The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
- A place where it can be easily drained.
- A place separated at least 1m away from the television or the radio. (To prevent interference to images and sound.)
- A place that home appliance and household goods, etc. aren't below unit.



(2) Outdoor unit

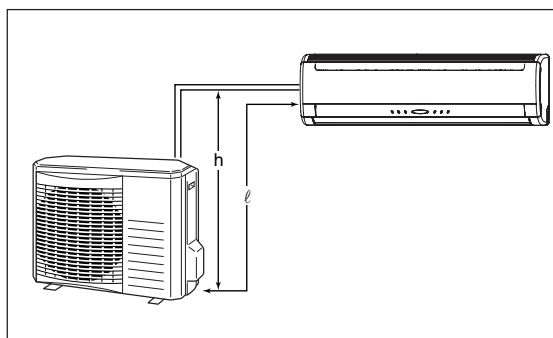
- A place where good air circulation can be obtained and where rain, snow or sunshine will not directly strike the unit.
 - A place where intake air temperature is over 46°C, it is desirable to install a roof avoiding the sunlight.
- A place where discharged hot air or unit's operating sound will not be a nuisance to the neighborhood.
- A place where servicing space can be secured.
- A place where vibration will not be enlarged.
- Avoid installing in the following places.
 - A place near the bedroom and the like, so that the operation noise will cause no trouble.
 - A place where there is possibility of flammable gas leakage.
 - A place exposed to strong wind.
 - In a salt-laden atmosphere or a place where the generation of oil mist, vapor or fume is expected.



- Notes (1) Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
 (In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)
- (2) When the unit is installed, the space of the following dimension and above shall be secured.

(3) Limitations for one way piping length and vertical height difference.

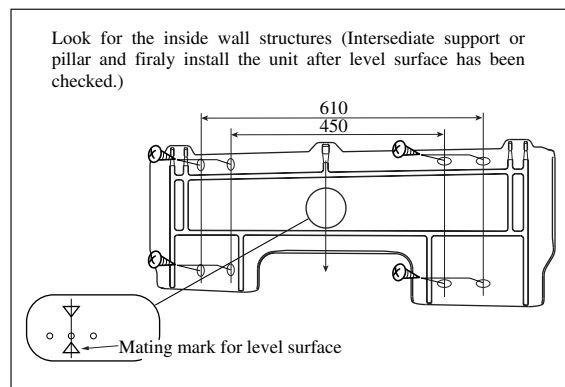
Item	Model	All models
One way piping length (ℓ)		25 m
Vertical height difference (h)	Outdoor unit is lower	15 m
	Outdoor unit is higher	15 m



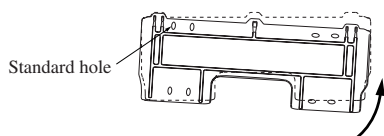
5.2 Installation of indoor unit

(1) Installation of installation board

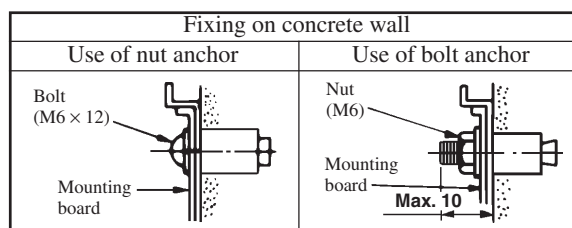
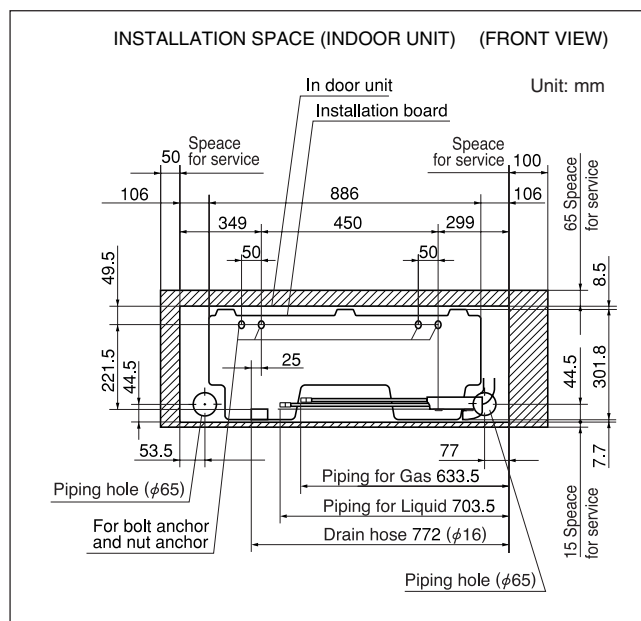
(a) Fixing of installation board



Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.



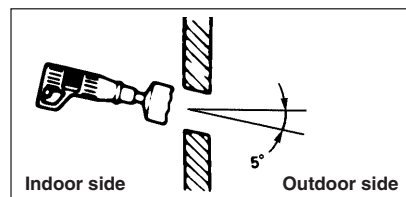
Adjust so that board will be level by turning the board with the standard hole as the center.



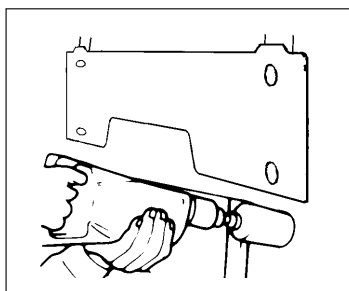
(2) Drilling of holes and fixture sleeve (Option parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

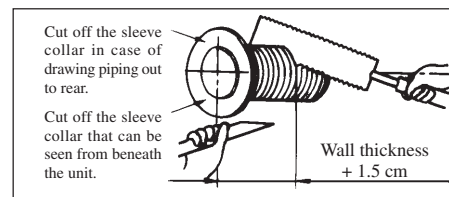
(a) Drill a hole with ø65 whole core drill



Note (1) Drill a hole with incline of 5 degree from indoor side to outdoor side.

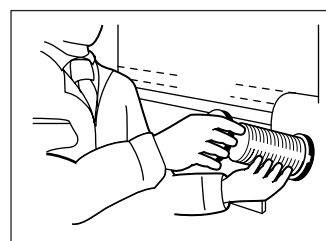


(b) Adjusting sleeve length

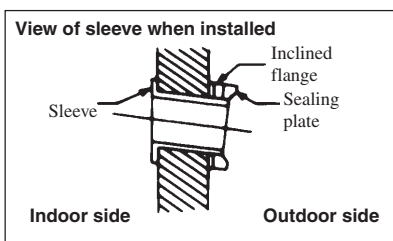
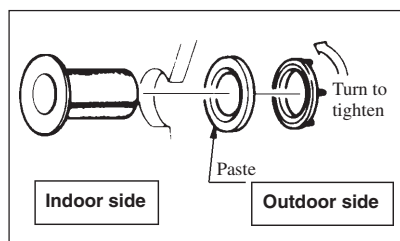


(c) Install the sleeve

(Inserting sleeve)



(*Sleeve + *Inclined + *Sealing plate)



(3) Preparation of indoor unit

(a) Mounting of connecting wires

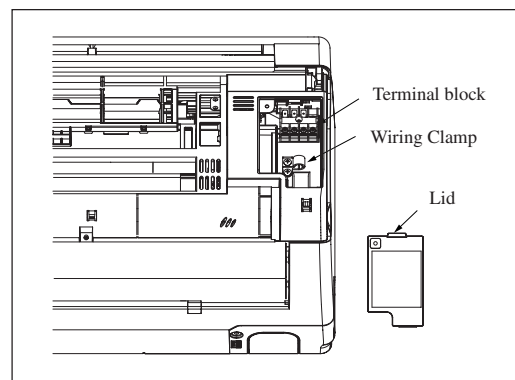
- 1) Open the air inlet panel.
- 2) Remove the lid.
- 3) Remove the wiring clamp.
- 4) Connect the connecting wire securely to the terminal block.

Use cables for interconnection wiring to avoid loosening of the wires.

CENELEC code for cables. Required field cables.

H05RNR4G1.5 (Example)

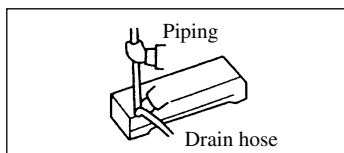
- H Harmonized cable type
- 05 300/500 volts
- R Natural-and/or synth, rubber wire insulation
- N Polychloroprene rubber conductors insulation
- R Standed core
- 4 Number of conductors
- G One conductor of the cable is the earth conductor (yellow/green)
- 1.5 Section of copper wire (mm²)



- ① Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
 - ② Take care not to confuse the terminal numbers for indoor and outdoor connections.
 - ③ Affix the connection wire using the wiring clamp.
- 5) Fix the connecting wire by wiring clamp.
 - 6) Attach the lid.
 - 7) Close the air inlet panel.

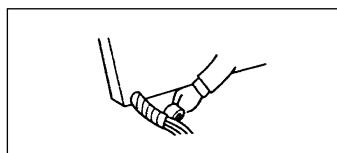
(b) Installing the support of piping

[Shaping the piping]



- Hold the bottom of the piping and fix direction before stretching it and shaping it.

[Taping of the exterior]



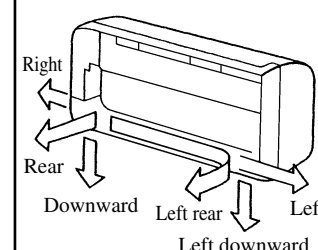
- Tape only the portion that goes through the wall. Always tape the crossover wiring with the piping.

[When the hose is extended to left and taken out from the rear center]

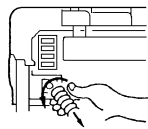
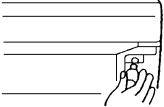
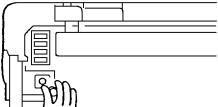
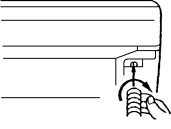
[Top View]

Left-hand-sided-piping	Right-hand-sided-piping
<p>Piping in the left rear direction</p> <p>Piping in the left direction</p>	<p>Piping in the right rear direction</p> <p>Piping in the right direction</p>

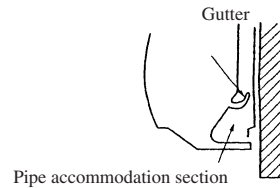
Piping is possible in the rear, left, left rear, left downward, right or downward direction.



[Drain hose changing procedures]

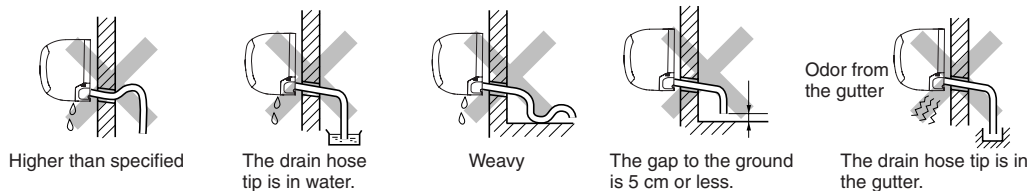
1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.
			
● Remove the drain hose, making it rotate.	● Remove it with hand or pliers.	● Insert the drain cap which was removed at procedure "2" securely using a hexagonal wrench, etc. Note: Be careful that if it is not inserted securely, water leakage may occur.	● Insert the drain hose securely, making it rotate. Note: Be careful that if it is not inserted securely, water leakage may occur.

Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.

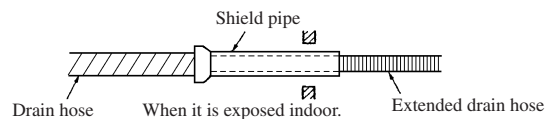


Drainage

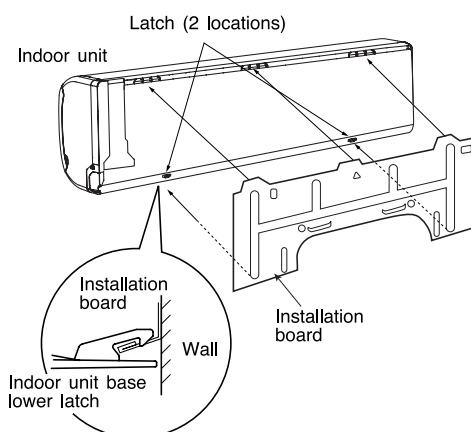
- Arrange the drain hose in a downward angle.
- Avoid the following drain piping.

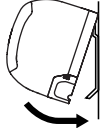
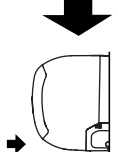


- Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
- When the extended drain hose is indoor, always use a shield pipe (to be arranged by the user) and ensure it is thermally insulated.

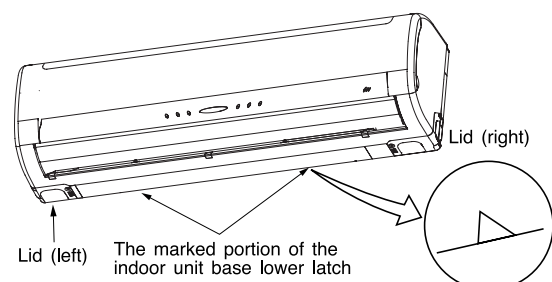


(c) Fixing of indoor unit



Installation Steps	
① Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.	
② Gently push the lower part to secure the unit.	

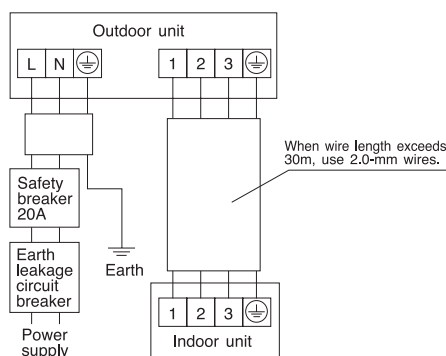
- How to remove the indoor unit from the installation board
 - ① Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you.
(both right and left hand sides)
(The indoor unit base lower latch can be removed from the installation board)
 - ② Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



5.3 Installation of outdoor unit

(1) Installation of outdoor unit

- Make sure that the unit is stable in installation. Fix the unit to stable base.
- When installing the unit at a higher place or where it could be toppled by strong winds, secure the unit firmly with foundation bolts, wire, etc.
- Perform wiring, making wire terminal numbers conform to terminal numbers of indoor unit terminal block.
- Connect using ground screw located near ⊕ mark.



Power supply code
CENELEC code for cables requiring field cables
H05RNR3G2.5

5.4 Refrigerant piping

(1) Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.

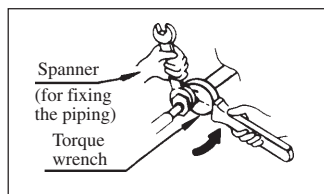
Indoor unit side	Outdoor unit side	
<ul style="list-style-type: none"> Remove the flared nuts. (on both liquid and gas sides) 	<ul style="list-style-type: none"> Remove the flared nuts. (on both liquid and gas sides) 	<ul style="list-style-type: none"> Install the removed flared nuts to the pipes to be connected, then flare the pipes.

Dimension A
Liquid side
($\phi 6.35$): 9.0 mm
Gas side
($\phi 15.88$): 19.4 mm

(2) Connection of refrigerant piping

Indoor unit side

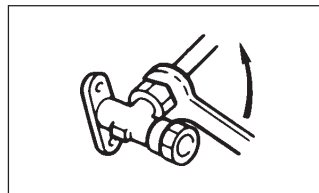
- Connect firmly gas and liquid side pipings by Torque wrench.



- Specified torquing value:
Liquid side ($\phi 6.35$) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side ($\phi 15.88$) : 68.0~82.0N·m (6.8~8.2kgf·m)
- Always use a Torque wrench and back up spanner to tighten the flare nut.

Outdoor unit side

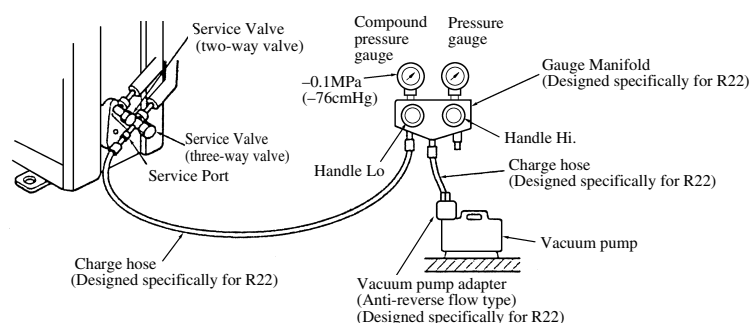
- Connect firmly gas and liquid side pipings by Torque wrench.



- Specified torquing value:
Liquid side ($\phi 6.35$) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side ($\phi 15.88$) : 68.0~82.0N·m (6.8~8.2kgf·m)
- Use one more spanner to fix the valve.

(3) Air purge

- Tighten all flare nuts in the pipings both indoor and outside will so as not to cause leak.
- Connect service valve, charge hose, manifold valve and vacuum pump as is illustrated below.
- Open manifold valve handle Lo to its full width, and perform vacuum or evacuation.
Continue the vacuum or evacuation operation for 15 minutes or more and check to see that the vacuum gauge reads -0.1 MPa (-76 cmHg).
- After completing vacuum operation, close the Lo handle fully and stop operation of the vacuum pump, then check to see that the vacuum gauge needle does not return.
- Fully open service valve (Both gas and liquid sides) with hexagon headed wrench.
- Detach the charge hoses, from the service port.
- Check for possible leakage of gas in the connection parts of both indoor and outdoor.



- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system. Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

Additional refrigerant charge

When refrigerant piping exceeds 7m conduct additional refrigerant charge by weight after refrigerant piping completion.

Additional charge amount per meter = 25g/m

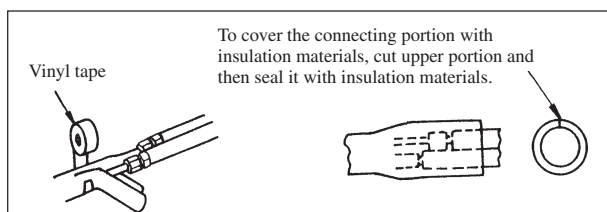
[Example]

How much amount of additional charge for 25m piping?

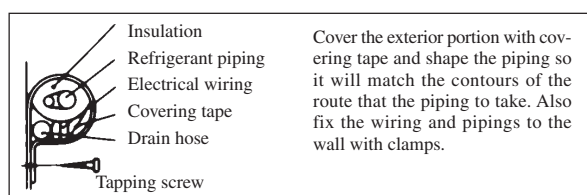
$(25 - 7)\text{m} \times 25\text{g/m} = 450\text{g}$ 450g for additional charge

(4) Insulation of connecting portion

- Cover the connecting portion of the refrigerant piping with the pipe cover and seal them.
If neglecting to do so, moisture occurs on the piping and water will drip out.



- Finishing and fixing
 - Tie up the piping with wrapping tape, and shape it so that it conforms to which the pipe is attached.
 - Fix them with clamps as right figure.



5.5 Test run

- (1) Conduct trial run after confirming that there is no gas leaks.
- (2) When conducting trial run set the remote control thermostat to continuous operation position. However when the power source is cut off or when the unit's operation switch is turned off or was turned to fan operation position, the unit will not go into operation in order to protect the compressor.
- (3) Explain to the customer on the correct usage of the air conditioner in simple layman's terms.
- (4) Make sure that drain flows properly.
- (5) **Standard operation data**

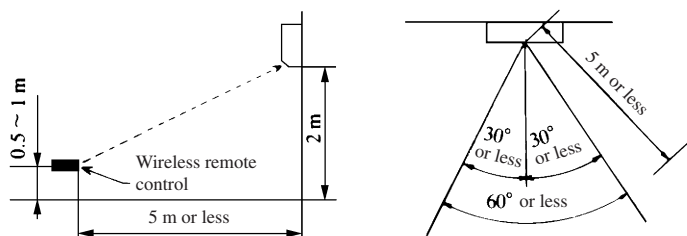
(220/240V)

Model		SRK52CF-BN	SRK52CF-BP	SRK71CF-BN	SRK71CF-BP
Item					
Low pressure (MPa)	Cooling	0.42 ~ 0.62		0.39 ~ 0.59	
Temp. difference between return air and supply air (°C)	Cooling	11 ~ 13		12 ~ 14	
Running current (A)	Cooling	8.8 / 8.7	8.8 / -	10.6 / 10.4	10.6 / -

Note (1) The data are measured at following conditions
 Ambient air temperature
 Indoor side: Cooling ... 27°C DB, 19°C WB
 Outdoor side: Cooling ... 35°C DB, 24°C WB

5.6 Precautions for wireless remote control installation and operation

- (1) **Wireless remote control covers the following distances:**
 - (a) **When operating facing the air conditioner:**

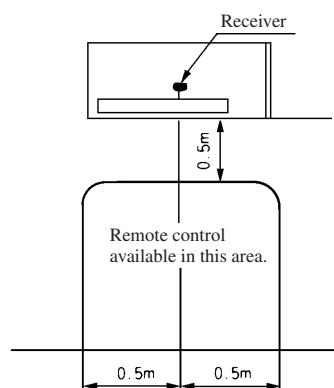


If the distances exceed the area indicated above, be sure to check the receiver status.

- (b) **When manipulating the remote control mounted on a wall:**

Make sure that it works normally (i.e., transmission/reception signal is audible) before mounting.

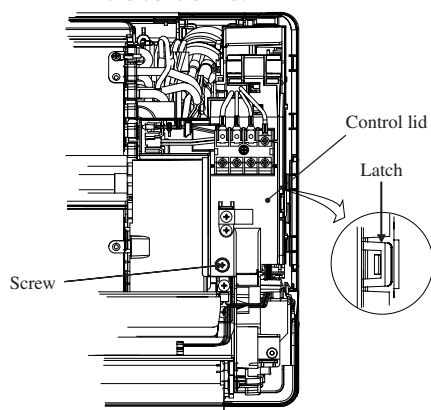
- Notes (1) The remote control is correctly facing the sensing element of the air conditioner when being manipulated.
- (2) The typical coverage is indicated (in the left illustration). It may be more or less depending on the installation.
- (3) The coverage may be less or even nil. If the sensing element is exposed to strong light, such as direct sunlight, illumination, etc., or dust is deposited on it or it is used behind a curtain, etc.



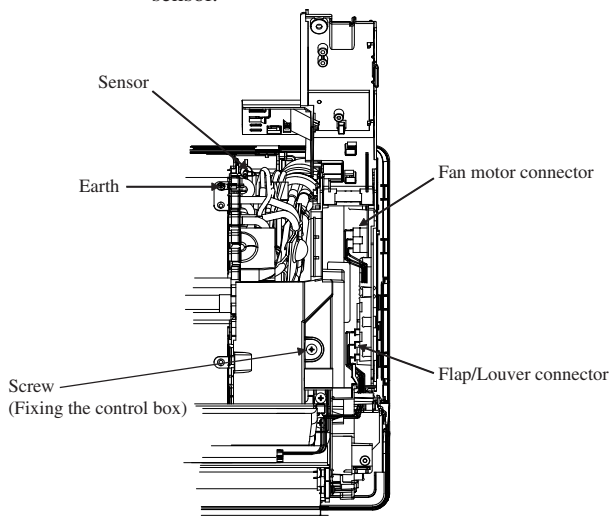
5.7 Installation of wired remote control and super link adapter (SC-AD-ER) (Optional parts)

(1) Modifying the indoor unit's printed circuit board

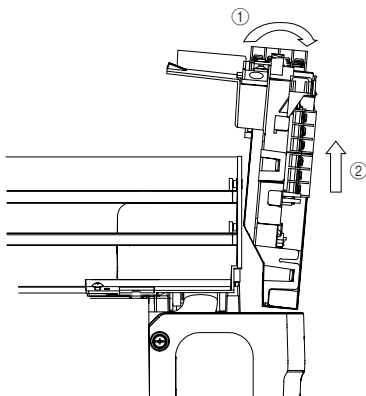
- (a) Remove the air inlet panel (Refer to the installation directions).
- (b) Remove the front panel (Refer to the installation directions).
- (c) Remove the control box
 - Remove the screw and the latch, and open the control lid.



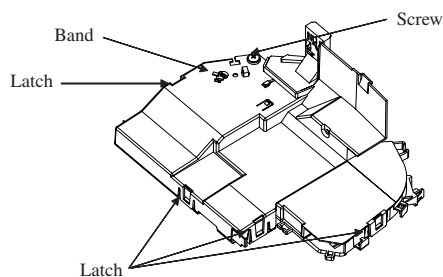
- Remove the flap connector, the louver connector, the fan motor connector, the earth and the sensor.



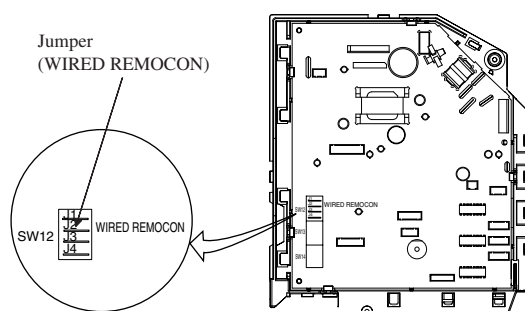
- Remove the screw fixing the control box.
- Remove the control box from the base.
- ※ It is possible to remove the control box from the base by leaning the control box slightly to right-hand side and pulling it toward you.



- (d) Cut the jumper attached on the board.
 - Remove the upper box.
 - ※ Remove the screw, the latch and the band.

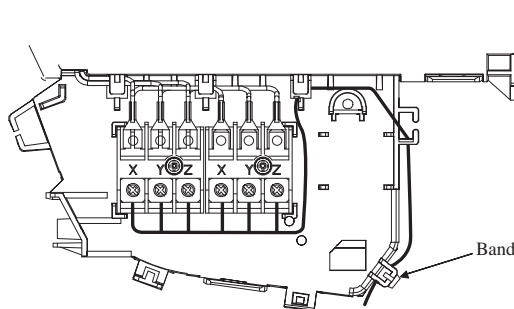


- Cut the jumper (printed "WIRED REMOCON") attached on the board.
- ※ It is impossible to control by the wireless remote control after cutting the jumper.



- Install the upper box.

- (e) Connect the wire
 - Connect the wired remote control and super link wire.
 (Please refer to the installation manual of attachment in wired remote control for details)



- ※ Each wire can be connected the left or right terminal block.

- (f) Install the control box.
 - Be careful not to bite the wire.
- (g) Install the front panel.
- (h) Install the air inlet panel.

Notes (1) One remote control cannot control two or more indoor units.
 (2) To connect the super link, the optional SC-AD-ER (super link adapter) is required.

(2) Installation of wired remote control (Optional parts)

(a) Selection of installation location

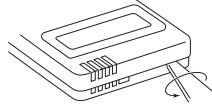
Avoid the following locations

- 1) Direct sunlight.
- 2) Close to heating device.
- 3) Highly humid or water splashing area.
- 4) Uneven surface.

(b) Installation procedure

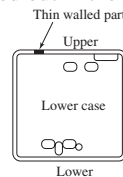
1) Exposed fitting

- a) Open the remote control case.



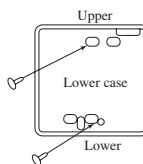
- Put a screw driver (flat-head) into the concavity made on the upper part of a remote control unit and twist it lightly to open the casing.

- b) The cord of a remote control unit can only be pulled out in the upward direction.



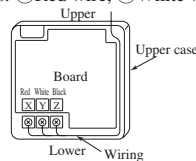
- Cut off with nippers or a knife a thin walled part made on the upper end of the remote control unit's bottom casing, and then remove burrs with a file or the like.

- c) Fix the remote control unit's bottom casing onto a wall with two wood screws supplied as accessories.



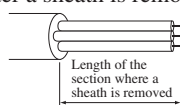
- d) Connect the remote control to the terminal block. Connect the terminals of the remote control to the indoor unit with the same numbers. Because the terminal block has polarity, the device becomes inoperative if there are wrong connections.

Terminals: (X) Red wire, (Y) White wire, (Z) Black wire



- Use a cord of 0.3mm² (recommended) - 0.5mm² (maximum) for a remote control unit cord. Remove a sheath of the remote control unit cord for the section laid within the remote control unit casing.

The length of each wire that should be left after a sheath is removed is as follows:



Black: 195mm, White: 205mm, Red: 215mm

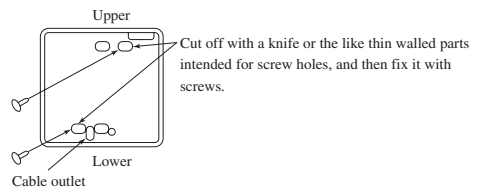
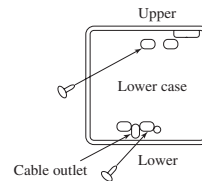
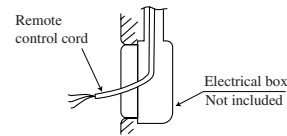
- e) Replace the top casing as before.

- f) Use a cord clamp to attach the remote control cord to the wall.

- g) Set the functions according to the types of indoor unit. See Section "Function Setting".

2) Recessed fitting

- a) The Electrical box and remote control (shield wire must be use in case of extension) are first embedded.



- b) Remove the upper case to the remote control.

- c) Attach the lower case to the Electrical box with two M4 screws. (Head diameter must be 8 mm). Choose either of the following two positions in fixing it with screws.

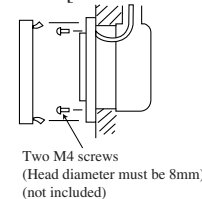
- d) Connect the remote cord to the remote control.

Refer to [Exposed Fitting].

- e) Installation work is completed by replacing the top casing onto the bottom casing as before.

- f) Set the function switch according to the type of the indoor unit.

Refer to [Function setting].



Precision in Extending the Remote control cord

- ▶ Maximum total extension 600m.

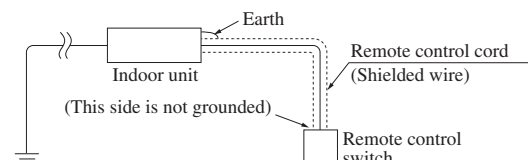
The cord should be a shielded wire.

- For all types : 0.3mm² × 3 cores

Note (1) Use cables up to 0.5mm² (maximum) for those laid inside the remote control unit casing and connect to a different size cable at a vicinity point outside the remote control unit, if necessary.

Within 100-200m.....	0.5 mm ² × 3 cores
Within 300m.....	0.75 mm ² × 3 cores
Within 400m.....	1.25 mm ² × 3 cores
Within 600m.....	2.0 mm ² × 3 cores

- The shielded wire should be grounded at one side only.



(3) Setting functions using the wired remote control

- (a) The default settings of this unit's functions are as follows: If you want to change a setting, follow the procedure found in the installation manual and set to your desired setting.

For the method of setting, please refer to the installation manual of a remote control unit.

① Remote control unit functions (FUNCTION ▼)

Function number (A)	Function description (B)	Setting (C)	Default setting
(01)	GRILLE↑↓SET (Grille lift panel setting)	↑↓ INVALID 50Hz AREA ONLY 60Hz AREA ONLY	○
02	AUTO RUN SET	AUTO RUN ON AUTO RUN OFF	○
03	☑️ TEMP S/W	☑️ VALID ☑️ INVALID	○
04	🔄 MODE S/W	🔄 VALID 🔄 INVALID	○
05	🔌 ON/OFF ON/OFF S/W	🔌 VALID 🔌 INVALID	○
06	⚙️ FANSPEED S/W	⚙️ VALID ⚙️ INVALID	○
07	🔧 LOUVER S/W	🔧 VALID 🔧 INVALID	○
08	⌚ TIMER S/W	⌚ VALID ⌚ INVALID	○
(09)	📡 SENSOR S/W (Remote control sensor setting)	📡 SENSOR OFF (Invalid) 📡 SENSOR ON (Valid)	○
10	POWER FAILURE COMPENSATION SET	INVALID VALID	○ *
(11)	VENTI SET	NO VENTI VENTI LINK SET NO VENTI LINK	○ ○ ○
12	TEMP RANGE SET	DISP CHANGE NO DISP CHANGE	○ ○
13	I/U FAN SPEED (Indoor unit fan speed setting)	3 FAN SPEED 2 FAN SPEED 1 FAN SPEED	○ ○ ○
14	MODEL TYPE	HEAT PUMP COOLING ONLY	○ ○
15	EXTERNAL CONTROL SET	INDIVIDUAL OPERATION SAME OPERATION FOR ALL UNITS	○ ○
16	ERROR DISP SET	ERROR DISP NO ERROR DISP	○ ○
17	🔧 POSITION (Louver control setting)	FIX (1 OF 4) (4 position stop) IN MOTION (Free stop)	○ ○
(18)	°C/°F SET	°C °F	○ ○

② Indoor unit functions (I/U FUNCTION ▲)

Function number (A)	Function description (B)	Setting (C)	Default setting
(01)	Hi CEILING SET	STANDARD (Mild mode) Hi CEILING 1 (Powerful mode)	*
(03)	FILTER SIGN SET	NO DISPLAY AFTER 180H AFTER 600H AFTER 1000H 1000H→STOP	*
04	🔧 POSITION (Louver control setting)	FIX (1 OF 4) (4 position stop) IN MOTION (Free stop)	○ ○
05	EXTERNAL INPUT SET	LEVEL INPUT PULSE INPUT	○ ○
06	OPERATION PERMISSION PROHIBITED	NORMAL OPERATION VALID	○ ○
(07)	☀️ ROOM TEMP OFFSET (Heating room temperature offset)	NORMAL OPERATION TEMP SHIFT +3°C	○ ○
(08)	☀️ FAN CONTROL (Heating fan control)	LOW FAN STOP→LOW FAN (Intermittent operation)	*
(09)	FREEZE PREVENT TEMP	TEMP Hi TEMP Lo	○ ○
(10)	FREEZE PREVENT CONTROL	FAN CONTROL ON FAN CONTROL OFF	○ ○

Notes(1) Setting marked with [○] are the default setting.

- (2) Setting marked with [*] are those that are set automatically according to an indoor unit or an outdoor unit connected.

Please check default settings with the indoor unit's installation manual.

- (3) The SRK model cannot set the items described in () in the function number (A).

Notes(1) Setting marked with [○] are the default setting.

- (2) Setting marked with [*] are those that are set automatically according to an indoor unit or an outdoor unit connected. Please check default settings with the indoor unit's installation manual.

- (3) When Item 17 : “🔧 POSITION” is changed, please also change Item 04 “🔧 POSITION” setting found in “Indoor unit functions”.

- (4) The SRK model cannot set the items described in () in the function number (A).

(b) Function setting method

- 1) Stop the air conditioner
- 2) Press the SET and MODE buttons simultaneously for 3 seconds or longer.

The screen display will be switched as follows:

“ SELECT ITEM” →

“ SET” →

“FUNCTION SET ▼”



- 3) Press the SET button.

The unit will enter the function setting mode. The screen display will change to “ FUNCTION ▼”.

- 4) Check which category your desired setting belongs to, “ FUNCTION ▼ (Remote control unit function)” or “I/U FUNCTION ▲” (Indoor unit function).

- 5) Press either or button.

Select either “ FUNCTION ▼ ” or “I/U FUNCTION ▲”.



- 6) Press the SET button.

When “ FUNCTION ▼ ” is selected.

- ① “DATA LOADING” (blinking) → “ FUNCTION” →

“01 GRILLE ↑↓ SET” (Function number: ①, Function description: ②)

The screen display will be switched like this.

- ② Press either or button.

“Function number: ①, Function description: ②” from the list of remote control unit functions will be displayed one by one. Select a desired function.

- ③ Press the SET button.

The screen display will be switched as follows:

“ SETTING” → “Setting: ③” (ex. “AUTO RUN ON”)

- ④ Press either or button.

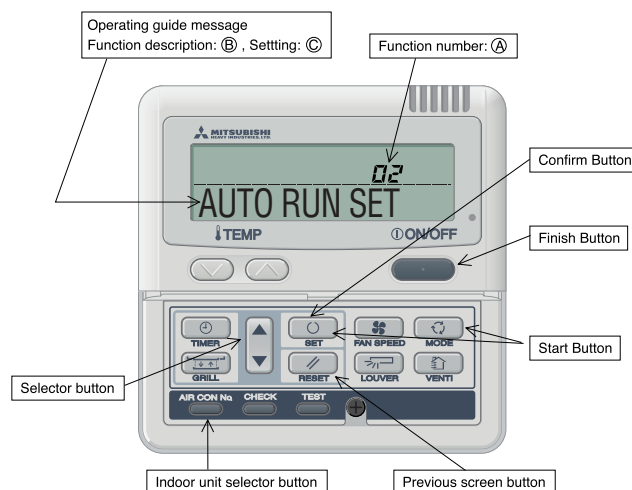
A list of “Settings: ③” will be displayed one by one. Select your desired setting.

- ⑤ Press the SET button.

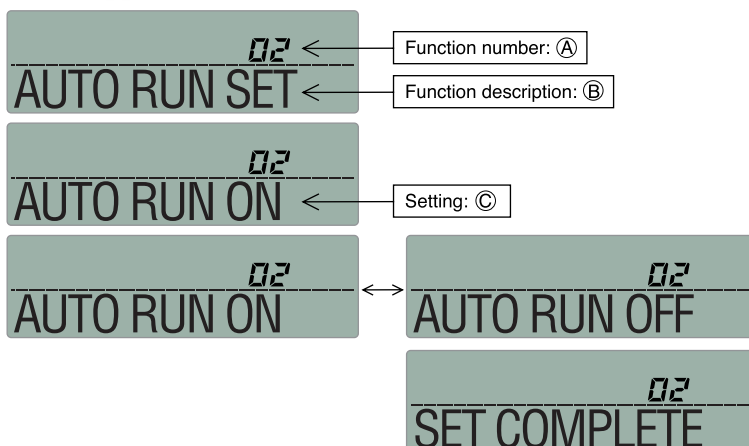
The selected setting is displayed for 2 seconds, then followed by “SET COMPLETE” and the function setting process is completed.

Then the screen display will be switched to “Function number: ①, Function description: ②,” so if you want to continue to set another function, repeat the steps as explained above.

To finish the function setting process, please proceed to Step (c).



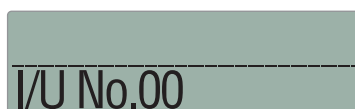
* When “02 AUTO RUN SET ” is selected.



When “I/U FUNCTION ▲” is selected.

- ① The screen display will be switched as follows:

“◆ I/U SELECT” → “○ SET” → “I/U No.00” (blinking)



- ② Press either ▲ or ▼ button.

Select the indoor unit number that you want to change settings. If only one indoor unit is connected, the indoor unit number will not change, so please proceed to Step ③.

If “ALL I/U ▼” is selected while indoor group control is in effect, you can set all units to the same settings.

- ③ Press the SET button.

Indoor unit number indication will change from blinking to lit continuously, The screen display will be switched as follows:

“DATA LOADING” (blinking for about 2 to 23 seconds) → “◆ FUNCTION” → “05 EXTERNAL INPUT SET”

(Function number: ①, Function description: ②)

* When “05 EXTERNAL INPUT SET” is selected.



- ④ Press either ▲ or ▼ button.

“Function number: ①, Function description: ②” from the list of indoor unit functions will be displayed one by one. Select a desired function.

- ⑤ Press the SET button.

The screen display will be switched as follows: “◆ SETTING” → “Setting: ③” (ex. “LEVEL INPUT”)



- ⑥ Press either ▲ or ▼ button.

A list “Setting: ③” will be displayed one by one. Select your desired setting.

- ⑦ Press the SET button.

The selected setting is displayed for 2 seconds, then followed by “SET COMPLETE” and the function setting process is completed.

Then the screen display will be switched to “Function number: ①, Function description: ②” so if you want to continue to set another function, repeat the step as explained above. To finish the function setting process, please proceed to Step 8.

- ⑧ Press AIR CON No. button.

The screen display will go back to the indoor unit selection screen (ex. “ I/U No.00”).

- (c) Press the ON/OFF button.

This ends a function setting process. Even if a function setting process is not completed, this ends the process.

Please note that any setting that is not completed will become void.

- **Pressing the RESET button during a function setting process will allow you to go back the previous step. Please note that any setting that is not completed will become void.**

- **Method of checking the current setting**

While following the above mentioned step, the setting that appears when the SET button is pressed for each “Function number: ①, Function description: ②” is the current setting “Sting: ③”. (When “ALL I/U ▼” is selected, the setting of the indoor unit with the lowest number is displayed)

- **Settings are stored in the controller and not lost even a power outage occurs.**

(d) Changing the remote control's temperature setting range

- 1) The temperature setting range of the remote control can be changed.

Through remote control button operations, the upper limit and lower limit set temperature values can be changed individually.

During heating operation, the changed upper limit value becomes valid and at times other than during heating operation, (during cooling, dehumidification, auto and fan operation), the changed lower limit value becomes valid.

Range of Possible Changes

Upper Limit Value: 22~30°C (valid during heating) Lower Limit Value: 18 ~ 26°C (valid at times other than during heating)

- 2) Operation

- a) With the remote control in the stopped state, press the SET and MODE buttons simultaneously for 3 seconds or longer. The display will changed from “ SELECT ITEM” → “ SET” → “FUNCTION SET ”
 - b) Press the button once. The display will change to TEMP RANGE .
 - c) Press the SET button to enter the temperature range setting mode.
 - d) Using the or button, select “Hi LIMIT SET ” or “Lo LIMIT SET ,” the press the SET button.
 - e) If “Hi LIMIT SET” is selected,
 - ① The display changes from “ SET UP” → “Hi LIMIT 22°C ” (flashing).
 - ② Using the “ ” button, select the upper limit value. Display example: “Hi LIMIT 22°C ” (flashing)
 - ③ Press the SET button to fix the setting. Display example: “Hi LIMIT 22°C” (lighted up)
 - f) If “Lo LIMIT SET” is selected,
 - ① The display changes from “ SET UP” → “Lo LIMIT 26°C ” (flashing).
 - ② Using the “ ” button, select the upper limit value. Display example: “Lo LIMIT 26°C ” (flashing)
 - ③ Press the SET button to fix the setting. Display example: “Lo LIMIT 26°C” (lighted up)
 - g) Press the ON/OFF button to end the setting procedure.

(The procedure also ends if the ON/OFF button is pressed during the setting operation. However, settings which have not been fixed become invalid, so exercise caution.)
- If the RESET button is pressed during a setting operation, the display returns to the previously displayed setting screen. However, settings which have not been fixed become invalid, so exercise caution.
- * If “NO DISP CHANGE” is selected in No. 12, “TEMP RANGE SET” of the remote control's functions, of the function setting modes, the remote control's display does not change even if the temperature range has been changed.

(Example) If the upper limit is set at 28°C

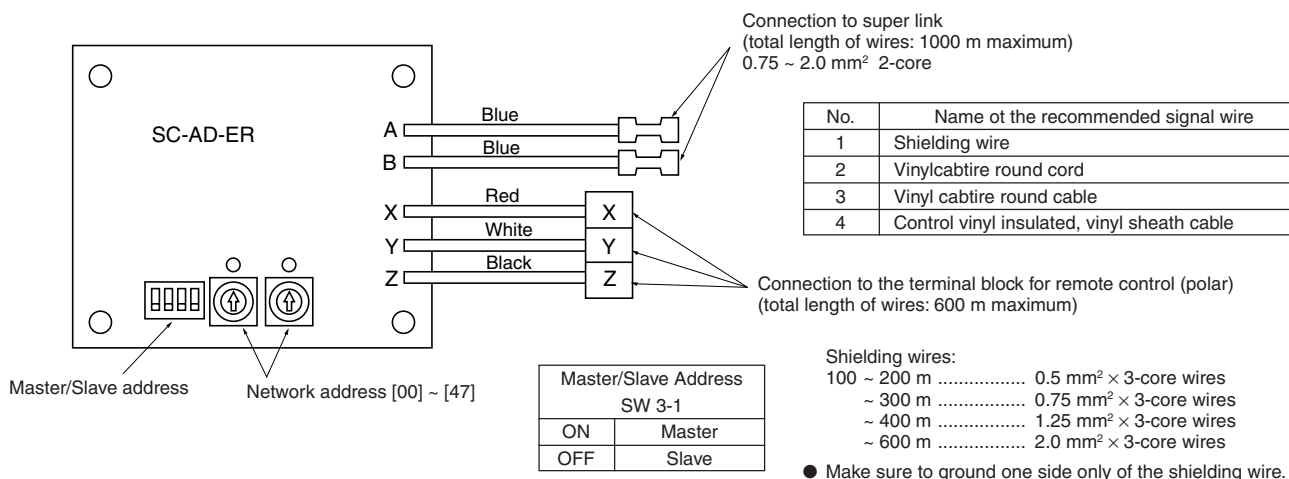
Function No. A	Function Contents B	Setting Contents C	Control Contents
12	TEMP RANGE SET	DISP CHANGE	The remote control's display and sent data upper limit changes to 28°C.
		NO DISP CHANGE	The remote control's display upper limit remains at 30°C and only the upper limit of the sent data is changed to 28°C.

(4) SUPER LINK ADAPTER (SC-AD-ER)

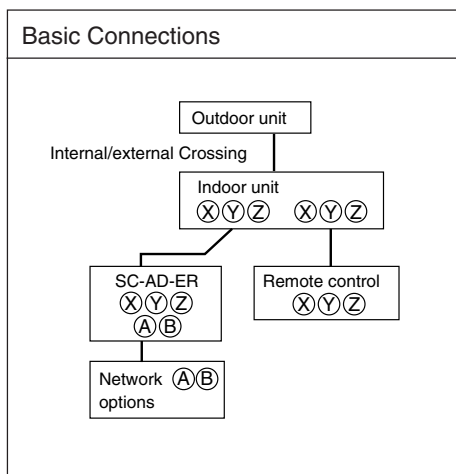
(a) Functions

- 1) Transmits the settings from the Super link option to the indoor units.
- 2) Returns the priority indoor unit data in response to a data request from the Super link option.
- 3) Inspects the error status of connected indoor units and transmits the inspection codes to the Super link option.
- 4) A maximum of 16 units can be controlled (if in the same operation mode).

(b) Wiring connection diagram



- 1) Set the super link network address with SW1 (10-position) and SW2 (1-position).
- 2) Without a remote control (no wired remote control and no wireless remote control), set SC-AD-ER SW3-1 to ON (Master).



6. MAINTENANCE DATA

6.1 Troubleshooting procedures for electrical equipment

(1) Cautions

- ① If you are disassembling and checking an air conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work. When working on an outdoor unit, there may be an electrical charge applied to the main circuit (electrolytic condenser), so begin work only after discharging this electrical charge (to DC 10 V or lower).
- ② When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.
- ③ When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(2) Items to check before troubleshooting

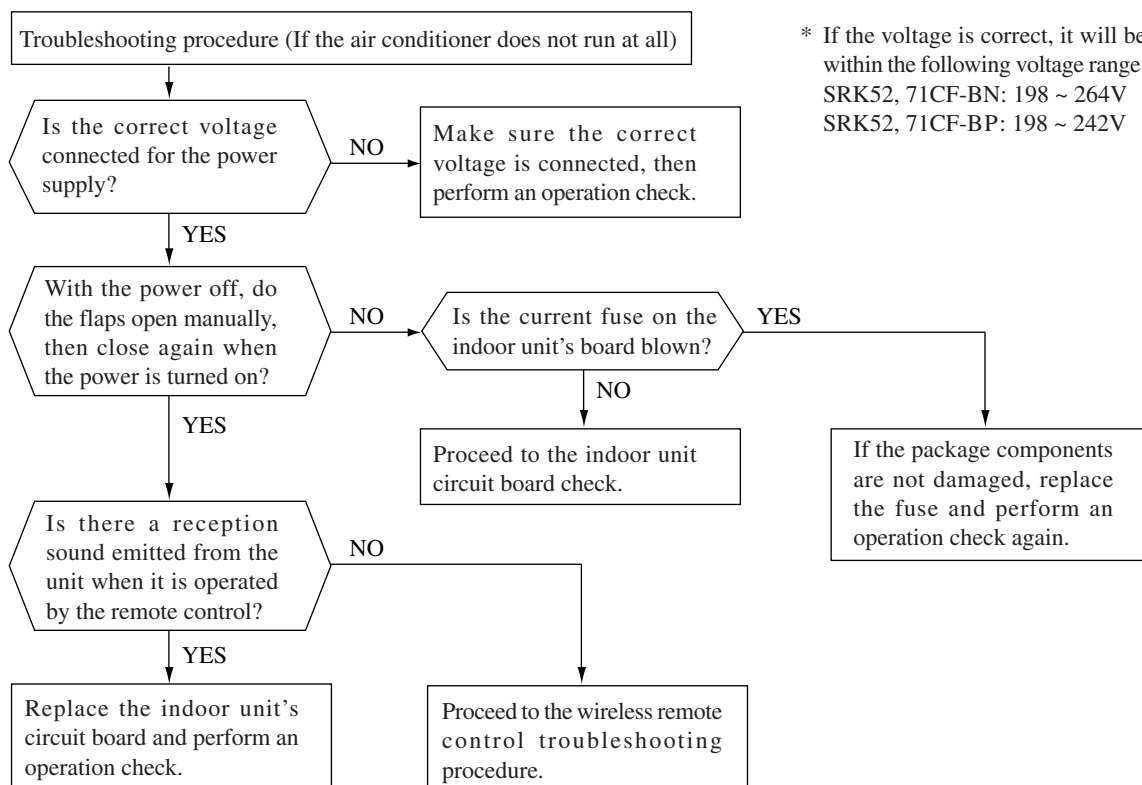
- ① Have you thoroughly investigated the details of the trouble which the customer is complaining about?
- ② Is the air conditioner running? Is it displaying any self-diagnosis information?
- ③ Is a power supply with the correct voltage connected?
- ④ Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?
- ⑤ Is the outdoor unit's refrigerant service valve open?

(3) Troubleshooting procedure (If the air conditioner does not run at all)

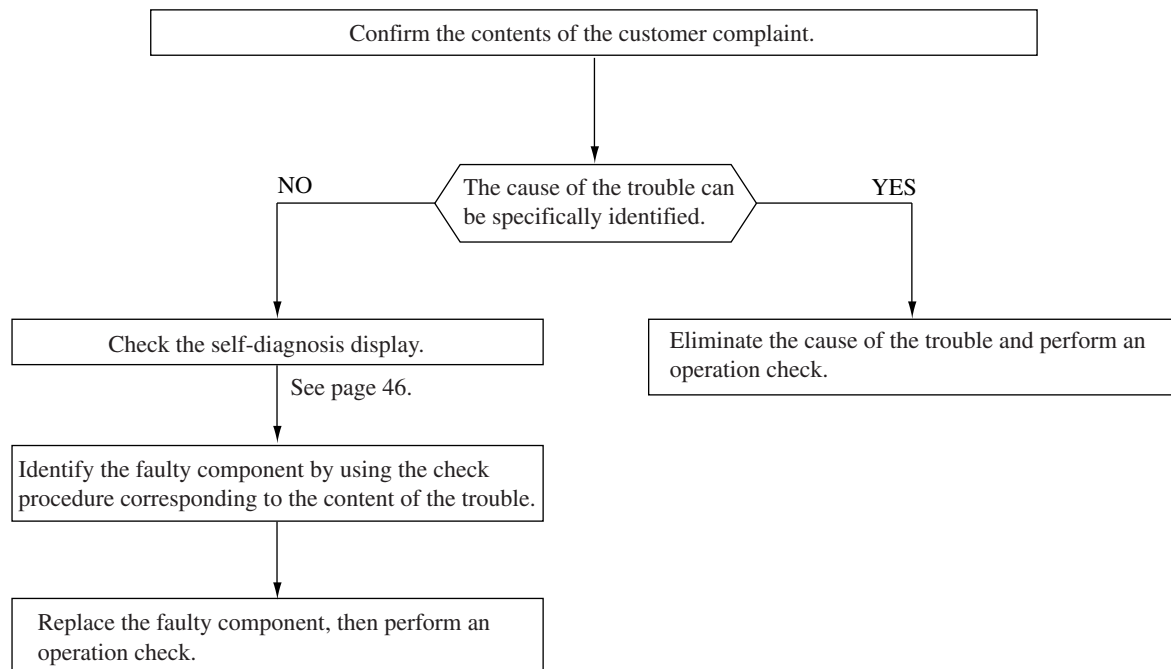
If the air conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air conditioner is running but breaks down, proceed to troubleshooting step (4).

Important When all the following conditions are met, we say that the air conditioner will not run at all.

- ① The Run light does not light up.
- ② The flaps do not open.
- ③ The indoor unit fan motors do not run.
- ④ The self-diagnosis display does not function.



(4) Troubleshooting procedure (If the air conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(5) Self-diagnosis table

When this air conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air conditioner is operated using the remote control 3 minutes or more after the emergency stop, the trouble display stops and the air conditioner resumes operation. ⁽¹⁾

Indoor unit display panel		Wired remote control display	Description of trouble	Cause	Display (flashing) condition
Run light	Timer light				
ON	6 time flash	E 5	Error of signal transmission	• Defective power supply, Broken signal wire, defective in/outdoor unit boards	When there is no signal between the indoor unit's board and outdoor unit's board for 10 seconds or longer (when the power is turned on), or when there is no signal for 1 minute 50 seconds or longer (during operation)(the compressor is stopped).
1 time flash	ON	E 6	Heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection	When a heat exchanger sensor wire disconnection is detected while operation is stopped. (If a temperature of -20°C or lower is detected for 3 minutes, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 time flash	ON	E 7	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of -20°C or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
6 time flash	ON	E 16	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 rpm or lower is measured for 30 seconds or longer. (The air conditioner stops.)
ON	5 time flash	E 36	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, closed service valve	When the value of the discharge pipe sensor exceeds the set value. (The air conditioner stops.)
Keeps flashing	2 time flash	E 37	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection	When a sensor wire disconnection is detected while operation is stopped. (If a temperature of -64°C or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
Keeps flashing	1 time flash	E 38	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection	When an outdoor air temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of -64°C or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
Keeps flashing	4 time flash	E 39	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection	After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe temperature sensor detected -64°C for 15 seconds.
ON	2 time flash	E 59	Abnormality of outdoor unit	• Broken compressor wire • Broken discharge pipe sensor wire, poor connector connection • Compressor blockage	When the indoor heat exchanger temperature does not fall to 25°C or below for 40 minutes after 5 minutes have elapsed since the compressor operation start.
—	—	E 1	Error of wired remote control wiring	• Broken wired remote control wire, defective indoor unit boards	The wired remote control wire Y is open. The wired remote control wires X and Y are reversely connected. Noise is penetrating the wired remote control lines. The wired remote control or indoor control PCB is faulty. (The communications circuit is faulty.)

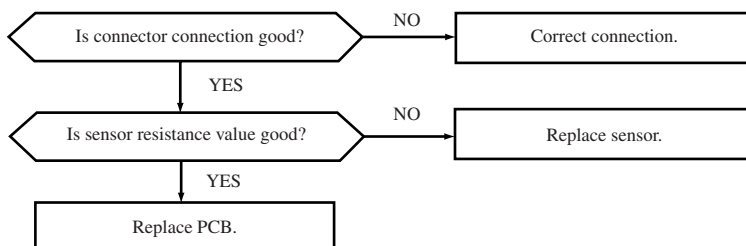
Notes (1) The air conditioner cannot be restarted using the remote control for 3 minutes after operation stops.

(2) The wired remote control is optional parts.

(6) Inspection procedures corresponding to detail of trouble

Sensor error

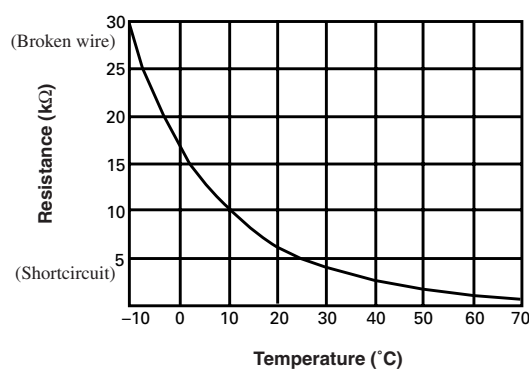
[Broken sensor wire, connector poor connection]



◆ Sensor temperature characteristics (Discharge pipe temp., outdoor unit heat exchanger temp.)

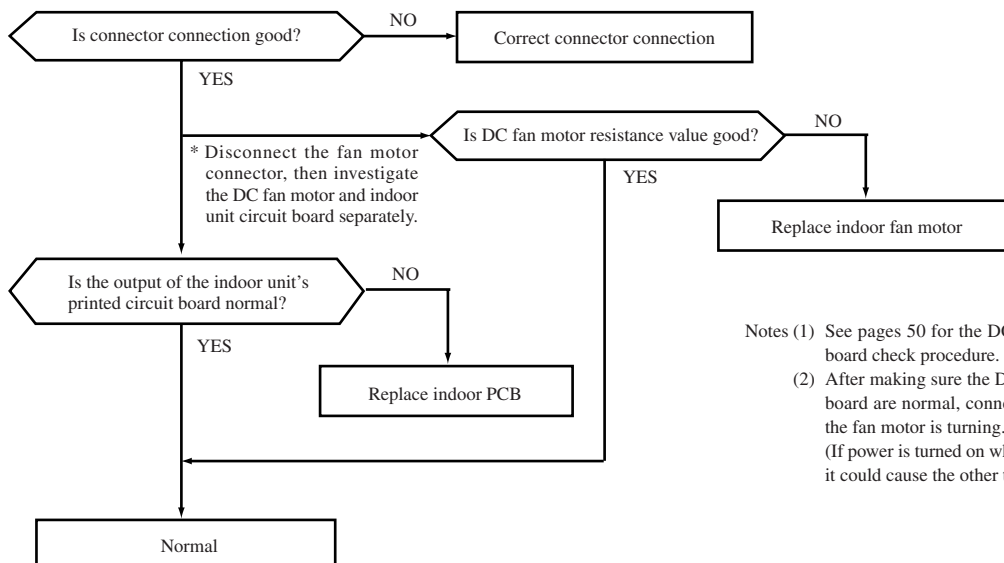
Temperature (°C)	Resistance (kΩ)	Temperature (°C)	Resistance (kΩ)
0	164	70	8.7
5	127	75	7.3
10	99	80	6.2
15	78	85	5.3
20	62	90	4.5
25	50	95	3.9
30	40	100	3.3
35	32	105	2.9
40	26	110	2.5
45	21	115	2.2
50	17	120	1.9
55	14	125	1.6
60	12	130	1.4
65	10	135	1.3

◆ Sensor temperature characteristics (Room temp., indoor unit heat exchanger temp., outdoor air temp.)



Indoor fan motor error

[Defective fan motor, connector poor connection, defective PCB]



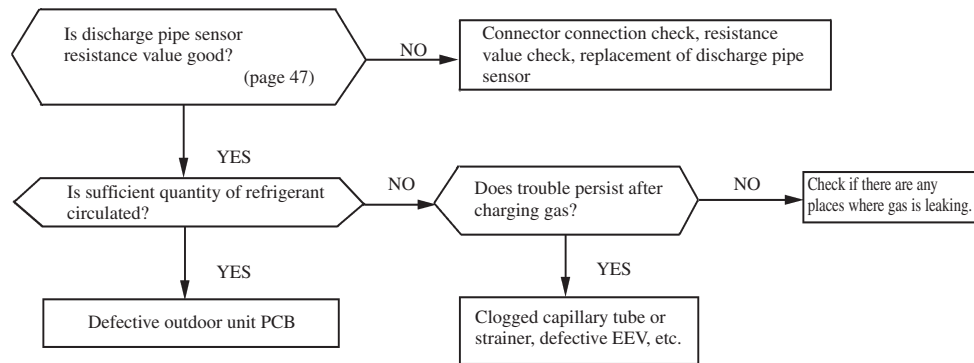
Notes (1) See pages 50 for the DC fan motor and indoor unit circuit board check procedure.

(2) After making sure the DC fan motor and indoor unit circuit board are normal, connect the connectors and confirm that the fan motor is turning.

(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

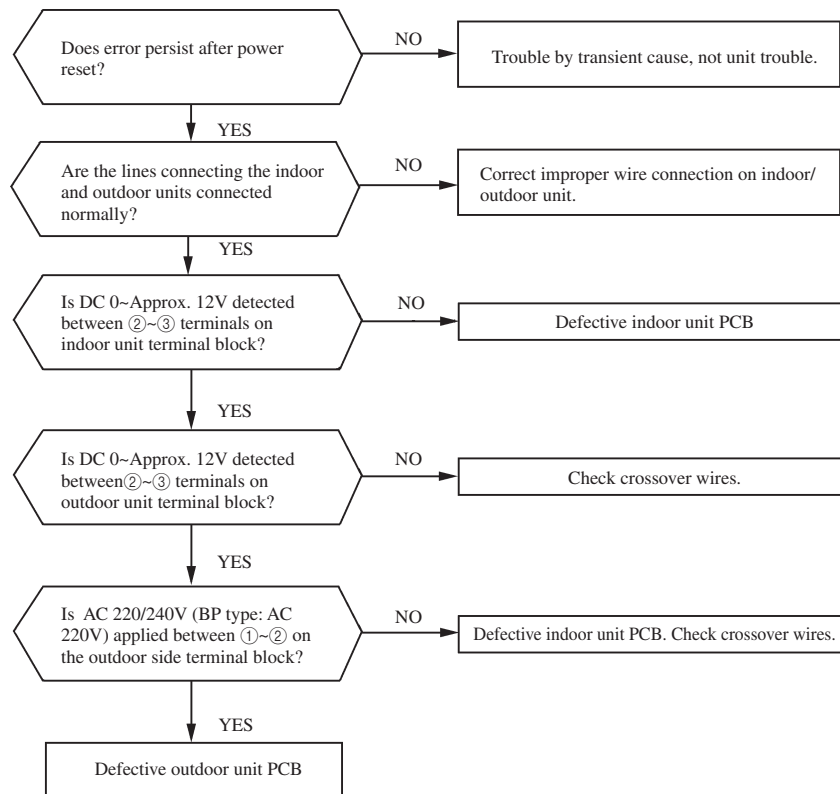
Over heat of compressor

[Gas shortage, defective discharge pipe sensor]



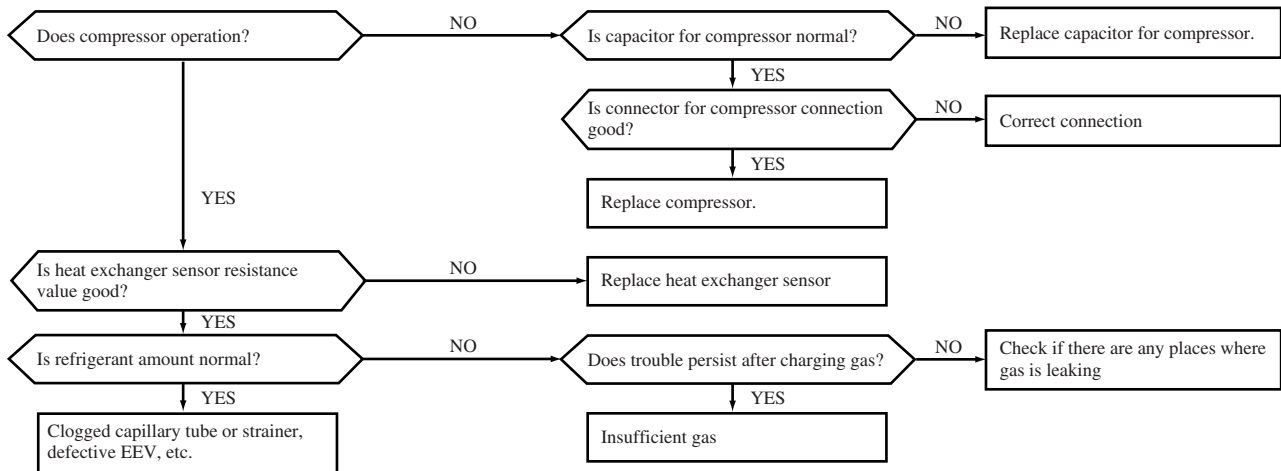
Error of signal transmission

[Wiring error including power cable, defective indoor/outdoor unit PCB]



Abnormality of outdoor unit

[Compressor malfunction of insufficient gas (refrigerant)]



(7) Phenomenon observed after shortcircuit, wire breakage on sensor.

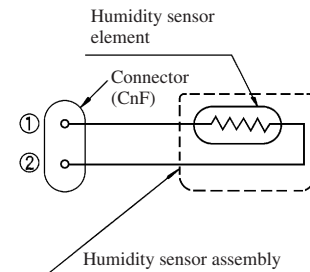
(a) Indoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Room temperature sensor	Cooling	Release of continuous compressor operation command	Continuous compressor operation command is not released.
Heat exchanger sensor	Cooling	Compressor stop. (Abnormality of outdoor unit)	Continuous compressor operation command is not released. (Anti-frosting)
Humidity Sensor	Cooling	① in the table below.	① in the table below.

① Humidity sensor operation

Failure mode	Control input circuit reading	Air conditioning system operation
Disconnected wire	① Disconnected wire	Humidity reading is 0%
	② Disconnected wire	Humidity reading is 0%
	①② Disconnected wire	Humidity reading is 0%
Short Circuit	① and ② are short circuited	Humidity reading is 100%

Remark: Do not perform a continuity check of the humidity sensor with a tester. If DC current is applied, it could damage the sensor.



(b) Outdoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Heat exchanger sensor	Cooling	High pressure control.	System can be operated normally.
Outdoor air temperature sensor	Cooling	System can be operated normally.	System can be operated normally.
Discharge pipe sensor	Cooling	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(8) Checking the indoor electrical equipment

(a) Indoor unit circuit board check procedure

- 1) Press the unit's ON/OFF button for 5 seconds or longer (a beep which indicates receiving will be emitted). Then check the following items.
 - ① The indoor unit's fan motor runs.
 - ② The run light lights up.
- 2) There should be voltage [AC 220-240 V (BP type: AC 220V)] between terminals ① and ② on the terminal block.
With the analog tester set in the DC 30 V range, if the voltage at ② (+) and ③ (-) is measured, the needle oscillates at about 12V.
- 3) It is possible to run and stop the unit using the remote control.

If operation is as described above, the indoor unit's board is normal.

Note (1) Check the voltage on the terminal block.

- Power supply : Between ①-② [AC 220-240 V (BP type: AC 220V)]
- Signal : Between ②-③ (Changing between DC 0-Approx. 12V)

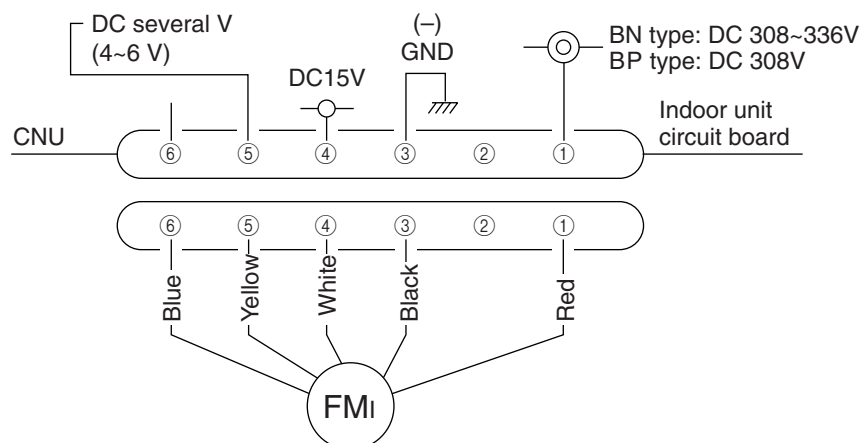
(b) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit's fan motor or the circuit board is broken down.

1) Indoor unit printed circuit board output check

- a) Turn off the power.
- b) Remove the front panel, then disconnect the fan motor lead wire connector.
- c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the circuit board is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor unit's circuit board has failed and the fan motor is normal.



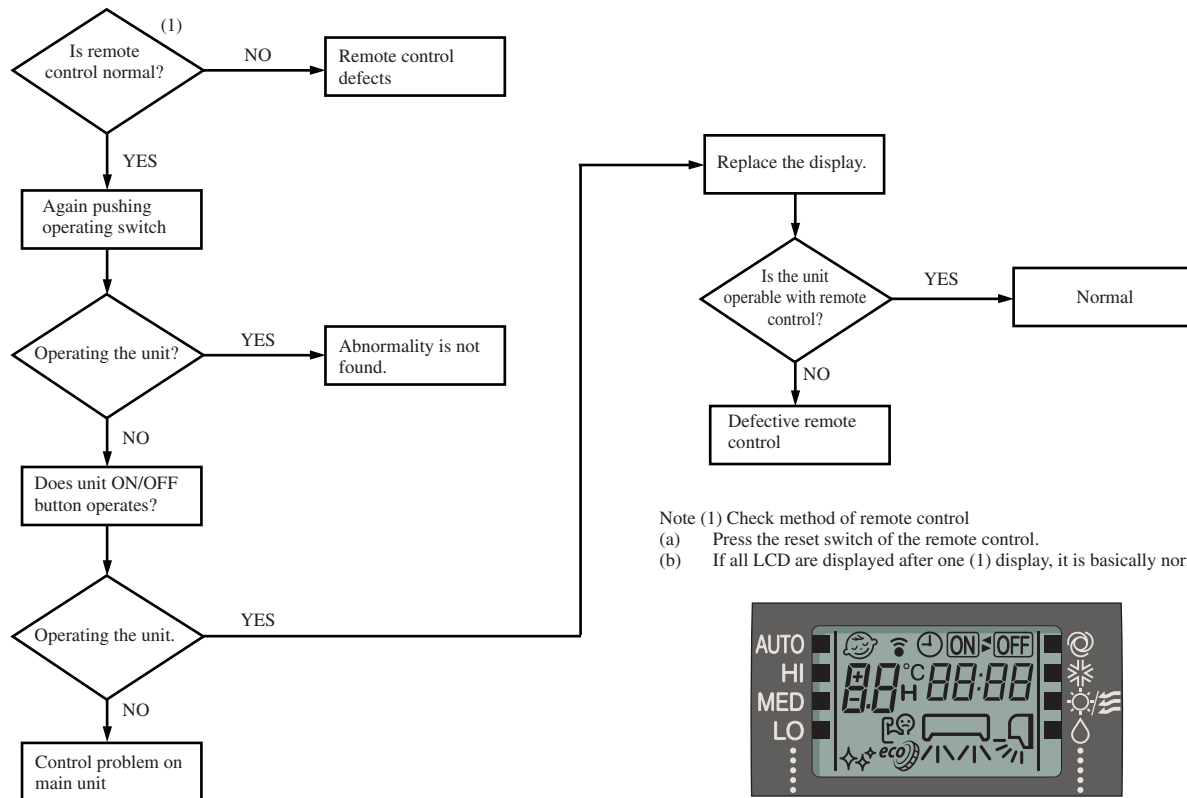
2) DC Fan motor resistance check

Measuring Point	Resistance when Normal
① - ③ (Red - Black)	25 MΩ or higher
④ - ③ (White - Black)	30 kΩ or higher

Notes (1) Remove the fan motor and measure it without power connected to it.

(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

(9) How to make sure of remote control



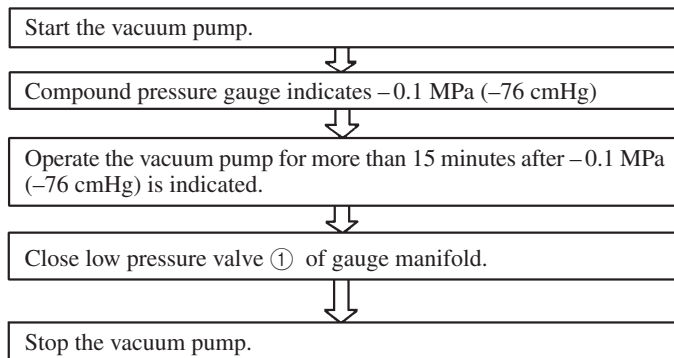
6.2 Servicing

(1) Evacuation

The evacuation is an procedure to purge impurities.....noncondensable gas, air, moisture from the refrigerant equipment by using a vacuum pump. Since the refrigerant R22 is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called water clogging.

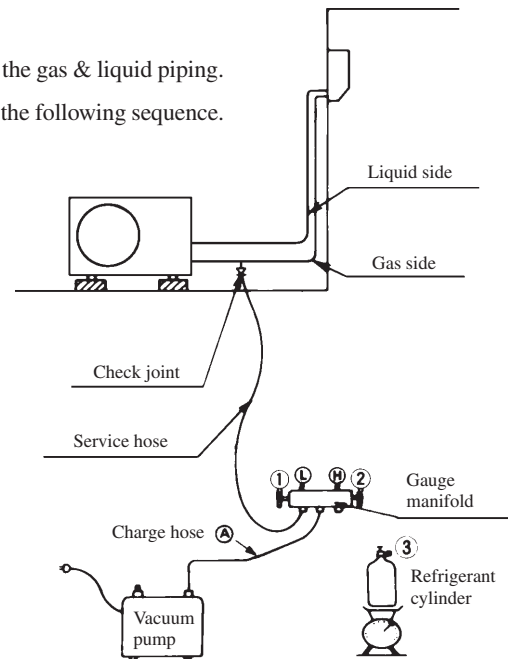
- Evacuation procedure

- Check to ensure that there is no internal pressure in the unit. If there is an internal pressure, it should be relieved through the check joint.
- Connect the service hoses of the gauge manifold to the check joint of the gas & liquid piping.
- Connect a vacuum pump to the charge hose (A). Repeat evacuation in the following sequence.



Notes

- (1) Do not use the refrigerant pressure to expel air.
- (2) Do not use the compressor for evacuation.
- (3) Do not operate the compressor in the vacuum condition.



(2) Refrigerant charge

- Discharge refrigerant entirely from the unit and evacuate the unit.

Note: Addition of refrigerant without evacuation is unreasonable, because it will result in low charge or overcharge.

- Keep the gauge manifold and connect a refrigerant cylinder to the unit.
- Record the weight of the refrigerant cylinder on the balance. This is necessary for making sure of the charged refrigerant amount.
- Purge air from the charge hose (A)

Firstly loose the connecting portion of the charge hose (A) at the gauge manifold side and open the valve ③ for a few seconds, and then immediately retighten it after observing that gas is blow out from the loosened portion.
- Open the valve ① and ③ after discharging air from the charge hose (A), then the gas refrigerant begins flowing from the cylinder into the unit. Be sure to erect the refrigerant cylinder upright to let gas refrigerant flow into the unit.
- When refrigerant has been charged into the system to some extent, refrigerant flow becomes stagnant, when that happens, start the compressor in cooling cycle until the unit is filled with refrigerant to the specified weight.
- Making sure of the refrigerant amount, close the valve ③
- Disconnect the charge hose from the unit. Cover the valve ports of the refrigerant piping with caps and tighten them securely.
- Check for gas leakage applying a gas leak detector along the piping line.
- Start the air conditioner and make sure of its operating condition.....high side and low side pressures and temperature difference between return air and supply air.

WALL MOUNTED TYPE ROOM AIR-CONDITIONER



Air-Conditioning & Refrigeration Systems Headquarters
16-5, 2-chome, Kounan, Minato-ku, Tokyo, 108-8215, Japan
Fax : (03) 6716-5926